

A. Course Identification and General Information

1. Course title and code: Chem251 Analytical Chemistry for Non-major			
2. Credit hours: 3 (2+1)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Biochemistry			
4. Chemistry Department			
5. Level/year at which this course is offered 3 rd level / 2 nd year			
6. Pre-requisites for this course (if any) Chem101			
7. Co-requisites for this course (if any) Non			
8. Location if not on main campus Main campus			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="70%"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other (Laboratory)	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="30%"/>
Comments:			

B. Objectives

1. What is the main purpose for this course?

To learn and understand the basic principles of analytical chemistry, including but not limited to:

- Introduction to qualitative and quantitative analysis
- Chemicals, apparatus and unit operations of analytical chemistry.
- Gravimetric methods of analysis.
- Concentration expressions and calculations.
- Chemical equilibria.
- Aqueous solution, solubility and solubility product.
- Effect of electrolytes; cation and anion identification.
- Titrations in analytical chemistry.
- Neutralization titrations and acid base systems.
- Precipitation, complexation and redox reactions and titrations.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Increasing the web page reference materials.
- Encourage students self-dependence.
- Reducing the number of students.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

This course conducting together with the laboratory experiments to cover the basic principles and general concepts of the traditional analytical chemistry.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Introduction to qualitative and quantitative analysis	½	1
Chemicals, apparatus and unit operations of analytical chemistry	1	2
Gravimetric methods of analysis	2	4
Concentration expressions and calculations	2	4
Chemical equilibria	1	2
Aqueous solution, solubility and solubility product	2	4
Effect of electrolytes; cation and anion identification	½	1
Titration in analytical chemistry	2	4
Neutralization titrations and acid base systems	2	4
Precipitation, complexation and redox reactions and titrations	2	4
Total	15	30

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory or Studio	Practical	Other	Total
Contact Hours	30		28			58

Credit	2		1			3
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3. Additional private study/learning hours expected for students per week.

3

Learning Resources

1. List Required Textbooks

- Ibrahim Al-Zamil, M.A. AlHajjaji, Saad Al-Tamrah, M. Banah, "Analytical Chemistry, Gravimetric and Volumetric Analysis" 4th Ed., Al-Khrigi Publisher, 1432.
- Ibrahim Al-Zamil, "Analytical Chemistry, Instrumental Analysis" 2nd Ed., Al-Khrigi Library, 1998.
- D.A. Skoog, D.M. West, F.J. Holler, S.R. Crouch, "Fundamentals of Analytical Chemistry", 9th Ed., Brooks Cole, Cengage Learning, 2013.