



Jordan University of Science and Technology
Faculty of Science & Arts
Chemistry Department

CHEM233 Analytical Chemistry

Second Semester 2020-2021

Course Catalog

3 Credit Hours. The course aims to teach the student fundamentals of analytical chemistry and chemical analysis with emphasis on practical applications. Course started with introducing the steps of chemical analysis from obtaining the representative sample to statistical evaluation of analytical results. Calculation of amounts required for preparation of reagents and calibration standards is emphasized in the beginning. Statistical evaluation of analytical result is given in the beginning due to importance of validations. Matrix effects is emphasized by studying equilibrium considerations and matrix effect. Classical methods including gravimetric and volumetric methods are given exclusively in this course with practical applications. Volumetric methods include precipitation titrations, acid-base titrations, complexation titrations and oxidation-reduction titrations.

Text Book

Title	Quantitative Chemical Analysis
Author(s)	Daniel C. Harris W. H
Edition	8th Edition
Short Name	Quantitative Chemical Analysis
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Fundamentals of Analytical Chemistry	Skoog, West, Holler and Crouch	9th Edition	

Instructor

Name	Prof. Salem Al Barakat
Office Location	D3L0
Office Hours	
Email	barakat@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 08:30 - 10:00 Room: منصة الكترونية
Section 2: Lecture Time: Sun, Tue : 11:30 - 13:00 Room: منصة الكترونية

Prerequisites		
Line Number	Course Name	Prerequisite Type
911020	CHEM102 General Chemistry (2)	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Analytical Process	
Week 2	Chemical Measurements	
Week 3	Experimental Error	
Week 4	Statistics	
Week 5	Chemical Equilibria	
Week 6	Activity and Systematic Treatment of Equilibria	
Week 7	Gravimetric Analysis and Precipitation Titration	
Week 8	Monoprotic Acid-Base Equilibria	
Week 9	Polyprotic Acid-Base Equilibria	
Week 10	Acid-Base Titrations	
Week 11	Complexation Titrations with EDTA	
Week 12	Fundamentals of Electrochemistry	
Week 13	Redox Titrations	
Week 14	Sample Preparation and Practical Applications	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand preparation of solutions, expression of analytical results and statistical evaluation of analytical data. [1a, 1e]	35%	

Understand equilibrium (precipitation, monoprotic acids & bases) considerations for analytical reactions including activity and systematic treatment of equilibrium. [1a, 1e, 1j]	35%	
Understand precipitation equilibrium and its applications on gravimetric and titrimetric methods and aqueous equilibrium and its applications on acid-base titrations including mono and diprotic. [1a, 1b, 1c, 1e]	30%	

Relationship to Program Student Outcomes (Out of 100%)										
a	b	c	d	e	f	g	h	i	j	k
36.67	7.50	7.50		36.67					11.67	

Evaluation	
Assessment Tool	Weight
First	30%
Second	30%
Final	40%

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