

## Course Syllabus

1	Course title	Analytical Chemistry
2	Course number	0333211
3	Credit hours	3 Hour
	Contact hours (theory, practical)	(3,0)
4	Prerequisites / corequisites	0303102
5	Program title	Bachelor degree in chemistry
6	Program code	03
7	Awarding institution	The University of Jordan
8	School	Science
9	Department	Chemistry
10	Course level	2nd year
11	Year of study and semester (s)	Fall, Spring and Summer
12	Other department(s) involved in teaching the course	N/A
13	Main teaching language	English
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....
16	Issuing/Revision Date	<b>March 2023</b>

### 17 Course Coordinator:

Name: <a href="#">Mohammed Rasheed</a>	Contact hours: <b>11-12 T,T</b>
Office number: <a href="#">Old Chemistry Building</a>	Phone number: <b>22176</b>
Email: <a href="mailto:m.rasheed@ju.edu.jo">m.rasheed@ju.edu.jo</a>	

### 18 Other instructors:

<b>Prof. Ramia Albekaeen</b> <b>Dr. Mohammed Amer</b> <b>Dr. Safwan Fraihat</b>
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### 19 Course Description:

<i>Analytical chemistry is an undergraduate course that covers the following analytical methods and concepts: The nature of analytical chemistry, errors in chemical analysis, chemical equilibria, gravimetric method of analysis, titration methods and complexation titration.</i>
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## 20 Course aims and outcomes:

### A- Aims:

This course treats chemistry as a quantitative science and seeks to develop a keen observational and analytical insight. The aim of the course is to give the student a solid fundament in analytical chemistry, focusing mainly on classical but still widely used wet chemical methods. Following an introduction to analytical chemistry from a philosophical viewpoint, the fundamentals of the analytical process are discussed with focus on isolation, detection, quantification and identification of analytes. Statistical treatment of experimental errors is taught, with focus on ways of quality assuring measurements. Among the classical methods treated in the course are equilibrium and electrolytes concept, gravimetry, and titrations (precipitation, neutralization and complexometric).

### B- Course Learning Outcomes (CLOs): Upon successful completion of this course students will be able to:

B1. Understand the errors that associated with any analysis including types of errors, their effect on the measurements and how to measure them.

B2. Understand the equilibrium types and their effects on the analytical analysis.

B3. Understand the use of classical analytical methods such as gravimetric and titrimetric methods including precipitation, neutralization and complexation titrimetric reactions.

B4. Performing the analytical calculation and selecting a proper analysis method based on analyte type and matrix properties.

CLO \ PILO	PILO (1)	PILO (2)	PILO (3)	PILO (4)	PILO (5)	PILO (6)
1	X			X		X
2		X			X	
3	X	X		X		X
4		X	X		X	X

## 21. Topic Outline and Schedule:

Topic	Week	ILOs	Program SOs	ABET SOs	TLA (teaching, learning and Assessment)
1- Nature of Analytical Chemistry	1 <sup>st</sup> week	B3	a,b		<b>Mid and Final Exam</b>
2- Calculations Used in Analytical Chemistry	2 <sup>nd</sup> week	B4	a,b		
3- Errors in Chemical Analysis	3 <sup>rd</sup> week	B1	a,b,c		
4- Random Errors in Chemical Analysis					
5- Statistical Data Treatment and Evaluation	4 <sup>th</sup> week	B1	a,c		

6- Aqueous Solutions and Chemical Equilibria	5 <sup>th</sup> week	B2 & B4	a,b,c		<b>Mid and Final Exam</b>
7- Effect of Electrolytes on Chemical Equilibria	6 <sup>th</sup> week	B2 & B4	a,b		
8- Solving equilibrium Problems for complex systems					
9- Gravimetric Methods of Analysis	7 <sup>th</sup> week	B3 & B4	a,c		
10- Titrimetric methods; Precipitation Titrimetry	8 <sup>th</sup> week	B3 & B4	a,b,c		
11- Principles of Neutralization Titrations  Complexation Reactions and Titrations	9 <sup>th</sup> week	B3 & B4	a,b		

## 22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	CLO	Period (Week)	Platform
Midterm exam	30	Topics covered in chapters 1-6	1-3	Week # 7	On campus computerized exam
Quiz	20	Topics covered in chapters 7-9	2-4	Weak1-Weak 10	On campus computerized exam
Final exam	50	All Chapters	1-4	Final exams week	On campus computerized exam

## 23 Course Requirements

N/A

## 24 Course Policies:

- A- Attendance policies: **All the students should show up on the class time.**
- B- Absences from exams and handing in assignments on time: 5 absence allowed only, make up exam: after the normal exams of around one week.
- C- Health and safety procedures: No phone on during the lecture
- D- Honesty policy regarding cheating, plagiarism, misbehavior: Following the university regulations and rules.
- E- Grading policy: First 30%, Second 30%, and Final 50%
- F- Available university services that support achievement in the course: All available.

## 25 References:

Recommended books, materials, and media:  
Fundamentals of analytical chemistry by Skoog, West, Holler and Crouch, 9th edition (2004)

## 26 Additional information:

Safety Procedures should be followed carefully in this lab.

Name of Course Coordinator: Dr. Mohammed Rasheed Signature: *M. Rasheed* Date: **6/3/2022**

Head of Curriculum Committee/Department: ----- Signature: -----

Head of Department: ----- Signature:-----

Head of Curriculum Committee/Faculty: ----- Signature: -----

Dean: ----- Signature: -----