



Course Specifications

Course Title:	Qualitative Analytical Chemistry
Course Code:	4022134-2
Program:	Chemistry
Department:	chemistry
College:	Faculty of Applied Science
Institution:	Umm Al-qura University

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A. Course Identification

1. Credit hours:			
2. Course type			
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered: 3 rd level /2 nd year			
4. Pre-requisites for this course (if any): General Chemistry (1)			
5. Co-requisites for this course (if any): ---			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	X	70%
2	Blended		-
3	E-learning	X	30%
4	Distance learning		-
5	Other		-

7. Actual learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	10
2	Laboratory/Studio	30
3	Tutorial	--
4	Others (E-learning, office hours, exams)	20
	Total	60

B. Course Objectives and Learning Outcomes

<p>1. Course Description Qualitative Analytical Chemistry course provide students with the necessary background of qualitative analysis of different compounds and its application.</p>
<p>2. Course Main Objective By the end of this course student will be able to know the fundamentals of analytical chemistry and has the ability to identify different methods used for qualitative analysis.</p>

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge:	

CLOs		Aligned PLOs
1.1	Recognize classification and application of qualitative analysis (ionic and nonionic, electrolytic and non-electrolytic compounds)	K1
1.2	Describe the factors affecting on the solubility, precipitation	K1
1.3	Explain methods to express concentration and Identify chemical, kinetic equilibrium, acid base equilibrium and the importance of complex formation.	K2
2	Skills:	
2.1	Develop the reverse think skills and student gains the practical skills to choose the suitable methods for aqueous solutions solubility and redox processes	S1 & S3
2.2	Select the suitable method for expressing concentration and predict conditions of ideal precipitation	S4
3	Values:	
3.1	Work effectively both in a team, and independently on solving chemistry problems.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Inorganic qualitative analysis: its classifications and its applications	1
2	The solutions (Types of solutions – the solubility and factors effecting solubility – Solubility of aqueous, ionic and non-ionic compounds – methods for expressing concentrations	1
3	The chemical equilibrium and the rate of chemical reactions.	0.5+0.5E = 1
4	Acid- Base equilibrium, Dissociation of water, pH and Neutralization Indicators	1
5	Hydrolysis of salts, acids and weak base	0.5+0.5E = 1
6	Buffer solution in qualitative analysis	0.5+0.5E = 1
7	Colloidal solutions (colloidal particles and electric charge – pepitization – colloidal particles precipitation – conditions of ideal precipitation)	1+1E = 2
8	The precipitates and law of solubility product, The factors effecting on the solubility of precipitates and separations of ionic groups.	1+1E = 2
9	equilibrium of complex formation (Coordination complexes, its structure and types of bonds in ionic complexes)	1
10	Types of ionic complexes –application of equilibrium law on complexes reactions - application of complex formation in qualitative analysis, Oxidation reduction equilibrium	1+1E = 2
Total		13

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Recognize classification and application of qualitative analysis (ionic and nonionic, electrolytic and non-electrolytic compounds)	Lectures	Mid-term and final exams.
1.2	Describe the factors affecting on the solubility, precipitation	Lectures E-learning	Mid-term and final exams. Activities on blackboard.
1.3	Explain methods to express concentration and Identify chemical, kinetic equilibrium, acid base equilibrium and the importance of complex formation.	Lectures Scientific discussion	Mid-term and final exams Home work
2.0	Skills		
2.1	Develop the reverse think skills and student gains the practical skills to choose the suitable methods for aqueous solutions solubility and redox processes	Lectures Lab work E-learning	Exams Assignments on blackboard
2.2	Select the suitable method for expressing concentration and predict conditions of ideal precipitation	Lectures	Exams Group discussion
3.0	Competence		
3.1	Work effectively both in a team, and independently on solving chemistry problems.	Lab work E-learning	Activities on blackboard

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework or activities.	All weeks	5 %
2	E-learning	All weeks	5 %
3	Midterm Exam.	7	20 %
4	Practical Exam.	11	30 %
5	Final Exam. (2hours Exam)	12	40 %

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- We have faculty members to provide counseling and advice.
- Office hours: During the working hours weekly.
- Academic Advising for students

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> Douglas A. Skoog, Donald M. West, F. James Holler, Stanley R. Crouch. Fundamentals of analytical chemistry , 9 edition , Brooks Cole (2014) Gary D. Christian, Purnendu K. Dasgupta and Kevin A. Schug, Analytical Chemistry, 7th edition, WILEY (2014).
Essential References Materials	<ul style="list-style-type: none"> Lecture Hand outs available on the coordinator website
Electronic Materials	<ul style="list-style-type: none"> http://en.wikipedia.org/wiki/Petroleum1 - http://www.chemhelper.com/ http://www.chemweb.com/ http://www.science.uwaterloo.ca/~cchieh/cact/ <p style="text-align: center;">http://www.sciencedirect.com/</p>
Other Learning Materials	<ul style="list-style-type: none"> Microsoft Power Point and Microsoft Word Qualitative analysis video Teaching CD for qualitative analysis

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	-Classrooms capacity (30) students. -Providing hall of teaching aids including computers and projector.
Technology Resources (AV, data show, Smart Board, software, etc.)	Room equipped with computer and projector and TV.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	No other requirements.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	questionnaire (indirect)
Extent of achievement of course learning outcomes	Program Leader	results data analysis (direct) and questionnaire (indirect)
Quality of learning resources	Course instructor	Questionnaire (indirect)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Quality committee and department counsel
Reference No.	1 st meeting

Date

2021

Head of Chemistry Department



Dr Moataz Morad

