



Course Specification

(Bachelor)

Course Title: **Principles of Analytical Chemistry**

Course Code: **APEP1604**

Program: **Diploma - Technology of Environmental Protection**

Department: **Chemistry**

College: **Faculty of Applied Science**

Institution: **Umm Al-Qura University**

Version: *Course Specification Version Number*

Last Revision Date: *Pick Revision Date.*



Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content.....	4
D. Students Assessment Activities	5
E. Learning Resources and Facilities.....	5
F. Assessment of Course Quality	5
G. Specification Approval	6



A. General information about the course:

1. Course Identification

1. Credit hours: (3 (2 theoretical + 1 practical))

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (1st Year / 2nd Level

4. Course General Description:

The course provides students with the necessary background of qualitative analysis of different compounds and its application.

5. Pre-requirements for this course (if any):

General Chemistry

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	10
2.	Laboratory/Studio	27
3.	Field	
4.	Tutorial	6
5.	Others (specify)	43
Total		

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize classification and application of qualitative analysis (ionic and nonionic, electrolytic and non-electrolytic compounds)	K1	Lectures. Lab work.	Quiz. Final and mid-term exam. Lab exam
1.2	Describe the factors affecting on the solubility, precipitation	K1	Lectures	Quiz. Final and mid-term exam.
1.3	Explain methods to express concentration and the importance of complex formation.	K2	Lectures. Lab work.	Quiz. Final and mid-term exam. Lab exam
2.0	Skills			
2.1	Develop the reverse thinking skills and student gains the practical skills to choose the suitable methods for aqueous solutions solubility and redox processes	S2	Lectures	Exams



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	Select the suitable method for expressing concentrations and predict conditions of ideal precipitation	S3	Lectures Lab work	Quiz. Final and mid-term exam. Lab. Work.
3.0	Values, autonomy, and responsibility			
3.2	Work effectively both in a team, and independently on solving chemistry problems.	V3	Lab work Library visit.	Quiz. Lab report

C. Course Content

No	List of Topics	Contact Hours
1.	Analytical chemistry: introduction, types and importance.	2
2.	Qualitative chemical analysis	2
3.	Solutions, concentrations and the solutions preparation	2
4	Acid and base equilibrium, dissociation of water and indicator	2
5	Hydrolysis of salts, acids and weak base	2
6	Buffer solutions, preparation and importance	2
7	The precipitates and law of solubility product	2
8	The precipitates and solubility products	2
9	The factors effecting on the solubility of precipitates and separations of ionic groups.	2
10	Sample preparation for environmental analysis	2
Total		10

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework or activities .	--	10 %
2.	Midterm Exam .	5	20 %
3.	Practical Exam .	11	30 %
4	Final Exam. (2hours Exam)	12	40 %
5	Total		100 %



*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Lecture Hand outs available on the coordinator website
Supportive References	
Electronic Materials	<ul style="list-style-type: none"> • http://www.chemhelper.com/ • http://www.chemweb.com/ • http://www.science.uwaterloo.ca/~cchieh/cact/ http://www.sciencedirect.com/
Other Learning Materials	<ul style="list-style-type: none"> • Microsoft Power Point and Microsoft Word • Qualitative analysis video • Teaching CD for qualitative analysis

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> • Classrooms capacity (30) students. • Providing hall of teaching aids including computers and projector.
Technology equipment (projector, smart board, software)	Room equipped with computer and projector and TV
Other equipment (depending on the nature of the specialty)	No other requirements.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	<u>Indirect</u> (Online survey at the end of the semester (Program survey, Experience survey & course evaluation) and graduates survey.
Effectiveness of Students assessment		
Quality of learning resources	Students	<u>Direct</u> (feedback from faculty). <u>Indirect</u> (online survey at the end of the semester





Assessment Areas/Issues	Assessor	Assessment Methods
		(Program survey, Experience survey & course evaluation) and graduates survey.
The extent to which CLOs have been achieved		
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190635
DATE	22/11/1446

