

Kingdom of Saudi Arabia

The National Commission for

Academic Accreditation & Assessment



Course Specifications

Gravimetric analysis

402213-2

Institution: Umm Al-Qura University	Date of Report
College/Department : Applied Science /Chemistry Department	

A. Course Identification and General Information

1. Course title and code: Gravimetric analysis 402213-2			
2. Credit hours : 2 hrs.			
3. Program(s) in which the course is offered. Chemistry (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course : Dr. Marwa El Ghalban			
5. Level/year at which this course is offered : 03 th level /2 st year			
6. Pre-requisites for this course (if any) : Volumetric analysis course 402112			
7. Co-requisites for this course (if any)			
8. Location if not on main campus : both in El-Abdyah(boys side) and El-Zaher (girls side)			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	60
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	
c. e-learning	<input checked="" type="checkbox"/>	What percentage?	10
d. Correspondence	<input type="checkbox"/>	What percentage?	
f. Other	<input checked="" type="checkbox"/>	What percentage?	30
Comments: 30 % for the practical part			

B Objectives

1. What is the main purpose for this course?

The main objective of this course are to:

1. Stress the importance of gravimetric analysis and its applications
2. Introduce students to classical method of analysis and indicate their continuing application in modern chemistry
3. know the requirements to obtain a good precipitate
4. Provide the basis for analytical problem solving
5. Provide good laboratory practice and develop technical skills.

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)

encourage students to make reports in the recent trends in the field of analytical chemistry, either from the library or by using the Internet

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Principles of gravimetric analysis and procedures of the analysis	1	1
The methods and requirements of gravimetric analysis	1	1
Theoretical principles of precipitation	1	1
Stages of saturated, supersaturated and solubility product	1	1
Precipitation formation (nucleation, precipitate growth)	1	1
Factors affecting the solubility of precipitate	1	1
Precipitation from homogeneous solution	1	1
Contamination of precipitates ,Types of contaminates Coprecipitation, post precipitation, surface adsorption)	2	2
Mid Term exam	1	1
The methods of contaminates removing or minimizing	1	1
Organic precipitants, requirements and its application Inorganic precipitants, requirements and its application	1	1
Calculations of gravimetric analysis	2	2
Revisions and preparatory exam	1	1

<p>Practical part :</p> <ul style="list-style-type: none"> • Determination of water crystallization in barium chloride salt. • Determination of barium ion as barium sulphate. • Determination of aluminum in alum. • Determination of calcium using ammonium oxalate • Determination of lead as lead chromate • Determination of iron as ferric oxide • Determination of nickel using dimethylglyoxime • Determination of both aluminum and iron in mixture • Determination of magnesium as $Mg_2P_2O_7$ 		
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2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	15	-	-	14		29
Credit	1	-	-	1		2

3. Additional private study/learning hours expected for students per week.	<input type="text"/>
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
	The student should be able to		
1.1	• know principles of gravimetric analysis	<ul style="list-style-type: none"> • Lectures • Scientific discussion • Library visits • Web-based study 	<ul style="list-style-type: none"> • Exams • web-based student performance systems • portfolios • long and short essays posters lab manuals
1.2	• Determine requisites gravimetric analysis		
1.3	• Discover the suitable method for gravimetric analysis and purification		
1.4	• Recognize the theoretical principles of gravimetric analysis		
1.5	• Outline the difference between nucleation, precipitate growth		
1.6	• Identify the suitable condition of gravimetric analysis and removal of contamination		

1.7	• Familiar with organic and inorganic precipitants, requirements and its application		
1.8	• Write the importance of gravimetric analysis and application		
1.9	• Recognize importance of solubility product calculations in gravimetric analysis		
2.0	Cognitive Skills The student should be able to		
2.1	• - Develop the reverse think skills and predict the suitable methods for gravimetric analysis	1. group discussions 2. case study. 3. home work assignment containing problem thinking activities	1.Midterm exam 2.quizzes 3.Group discussion 4.Final exam
2.3	• Choose the suitable method to purify the precipitate		
2.4	• Design the standard methods of gravimetric analysis to remove the impurities		
2.5	• Create the different ideas to study the precipitation process, contamination, purification		
2.6	• Plan to make research program in gravimetric analysis according to systematic steps		
2.7	• Compare between the different organic and inorganic precipitants		
2.8	• Calculate percentage , strength of the analyte		
3.0	Interpersonal Skills & Responsibility		
3.1	Take the personality and responsibility for their own learning	1. Team work groups for cooperative work making. 2. Presenting the analysis and interpretation of a case study for each group to the other groups in class. 3.Open a general discussion with students in the area of educational issues for knowledge transfer between the students.	1.Writing group scientific report for a case study. 2.Assessment of the solution of problems submitted by the students.
3.2	Working effectively in groups and exercise leadership when appropriate		
3.3	Act ethically and consistently with high molar standards in personal and public forums Community linked thinking		
4.0	Communication, Information Technology, Numerical		
4.1	Communicate effectively in oral and written forms	1.Write a Report 2.Use digital libraries and/or E-Learning Systems for the communication with lecturer through the course work	1.Evaluating the activities of the students through the semester for their activities on the E-learning system, as well as, their communication with each other in different tasks.
4.2	Use information and communication technologies Use basic mathematical and statistical techniques		

			2.Evaluation of the report presented
5.0	Psychomotor		
5.1	NOT APPLICABLE		
5.2			

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5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Report, Quizzes or team project	-	10%
2	Mid term exam	8	20%
3	Practical	14	30%
4	Final exam	Final term	40%

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)
 - We have faculty members to provide counseling and academic advice.
 - 2 hours per week as office hours are available for discussion with the students.

E. Learning Resources

1. List Required Textbooks
1-D.A.Skoog and D.M.West,Fundemental of Analytical Chemistry, Saunders College Publishing,Philadelphin 1996
2. List Essential References Materials (Journals, Reports, etc.)
<ul style="list-style-type: none"> • Lecture Hand outs available on the coordinator website
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)
<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>
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
<ul style="list-style-type: none"> - Microsoft Power Point and Microsoft Word - gravimetric analysis video - Teaching CD for gravimetric analysis

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) <ul style="list-style-type: none"> • Classrooms capacity (30) students. Providing hall of teaching aids including computers and projector.

2. Computing resources (AV, data show, Smart Board, software, etc.)

Room equipped with computer and projector and TV

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Student discussion with the instructor allow for continuous feed back through the course progress.
- Student Evaluation Questionnaires.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor

- Discussions within the group of faculty teaching the course.
- Peer consultation on teaching strategies and its effectiveness.

3 Processes for Improvement of Teaching

- Workshops given by experts on new teaching and learning methodologies will be attended.
- Improving of the teaching strategies by monitoring the evaluation of the students progress through the semester

4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

Not effective yet.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- The course will be evaluated periodically after each semester based on the results of the students and the report presented by the teaching staff that will be discussed with the course coordinator so as to improve the course.

Faculty or Teaching Staff: Dr Marwa El Ghalban

Signature: _____ **Date Report Completed:** _____

Received by: Dr Hatem Altass **Department Head**

Signature: _____ **Date:** _____

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