

**Kingdom of Saudi Arabia**

**The National Commission for**

**Academic Accreditation & Assessment**



**Course Specifications**

**Chemistry of the Main Group Elements**

**(402221-2)**

### Course Specifications

Institution: <b>Umm Al-qura University</b>	Date of Report: <b>2016</b>
College/Department : <b>Faculty of Applied Science/ Chemistry Department</b>	

#### A. Course Identification and General Information

1. Course title and code: <b>Chemistry of the Main Group Elements / 402221-2</b>			
2. Credit hours: <b>2</b>			
3. Program(s) in which the course is offered. <b>Chemistry program</b>			
4. Name of faculty member responsible for the course: <b>Dr. Sawsan Al-Ashqar</b>			
5. Level/year at which this course is offered: <b>3<sup>rd</sup> level/2<sup>nd</sup> year</b>			
6. Pre-requisites for this course (if any): <b>General Chemistry 2 (402121-2)</b>			
7. Co-requisites for this course (if any):			
8. Location if not on main campus: <b>All campus (El-Abedyah, El-Zaher and Elaziziah)</b>			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
b. Blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage?	<b>100%</b>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
Comments:			

## B Objectives

1. What is the main purpose for this course?

By the end of this course, the student should fully aware of:

- The main group elements in the periodic table.
- The chemical properties of the main group elements through their reactions.
- The existence and most important compounds of the main group elements.

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)

**The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course**

**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
a. General and periodic properties of main group (non-transition) elements; atomic and ionic size, ionization potential, electron affinity, electro-negativity and physical properties.	2	4
b. Horizontal, perpendicular and diagonal relationships in periodic table	1	2
c. Hydrogen; position in periodic table, properties, isotopes and chemical properties.	1	2
d. s-block elements; electronic configuration, size, hardness, melting points – chemical properties; chemical reactivity with metals, nitrogen, acids, complexes formation – solubility and hydration – solubility in ammonia	4	8
e. Halides – some chemical properties of lithium and magnesium – diagonal relationship between lithium and magnesium.	1	2

f. Chemical properties of beryllium and differences between it and second group elements – diagonal relationship between beryllium and aluminum.	1	2
g. p-block elements; their electronic configuration properties and compounds – properties of the first element in each group in comparison with the last element – inert pair effect – changing of metallic and non-metallic properties in groups.	2	4
h. Study of the third, fourth, fifth, sixth, seventh and inert gases groups.	2	4

## II-General scheme for identification of organic aliphatic unknown

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28	-		-		28
Credit	2	-		-		2

3. Additional private study/learning hours expected for students per week.	<input type="text"/>
----------------------------------------------------------------------------	----------------------

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
--------------------------------------------------------------------------------------------------------------------

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	<b>Knowledge</b>		
1.1	Recognize the general and periodic properties of main group (non-transition) elements including their atomic and ionic size, ionization potential, electron affinity, electronegativity and physical properties.	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Scientific discussion</li> <li>• Library visits</li> </ul>	<ul style="list-style-type: none"> <li>• Exams</li> <li>• web-based student performance systems</li> </ul>
1.2	Recognize the horizontal, perpendicular and diagonal relationships in periodic table	<ul style="list-style-type: none"> <li>• Web-based study</li> </ul>	<ul style="list-style-type: none"> <li>• portfolios</li> </ul>

1.3	Study hydrogen isotopes and chemical properties.		
1.4	Define s-block elements and recognize their properties.		
1.5	Describe halides and state some chemical properties of lithium and magnesium – Recognize the diagonal relationship between lithium and magnesium.		
1.6	Record the chemical properties of beryllium and recognize the differences between it and second group elements		
1.7	Define the p-block elements and recognize their properties.		
1.8	Know the third, fourth, fifth, sixth, seventh and inert gases groups.		
2.0	<b>Cognitive Skills</b>		
2.1	Summarize the general and periodic properties of main group (non-transition) elements including their atomic and ionic size, ionization potential, electron affinity, electronegativity and physical properties.	<ul style="list-style-type: none"><li>• Lectures</li><li>• Scientific discussion</li><li>• Library visits</li><li>• Web-based study</li></ul>	<ul style="list-style-type: none"><li>• Exams</li><li>• web-based student performance systems</li><li>• portfolios</li></ul>
2.2	Compare between the horizontal, perpendicular and diagonal relationships in periodic table		
2.3	Interpret the s-block elements and recognize their properties.		
2.4	Criticize the diagonal relationship between lithium and magnesium.		
2.5	Compare between beryllium and second group elements		
2.6	Define the p-block elements and recognize their properties.		
3.0	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	Illustrate the general and periodic properties of main group (non-transition) elements	<ul style="list-style-type: none"><li>• Lectures</li><li>• Scientific discussion</li><li>• Web-based study</li></ul>	<ul style="list-style-type: none"><li>• Exams</li><li>• web-based student performance systems</li></ul>
3.2	Show s-block and p-block elements and analyze their properties.		
4.0	<b>Communication, Information Technology, Numerical</b>		

4.1	Evaluate the general and periodic properties of the s and p-block elements.	<ul style="list-style-type: none"><li>• Lectures</li><li>• Scientific discussion</li><li>• Library visits</li><li>• Web-based study</li></ul>	<ul style="list-style-type: none"><li>• web-based student performance systems</li><li>• individual and group presentations</li></ul>
4.2	Interpret the properties of the s and p-block elements		
5.0	Psychomotor		
5.1	NOT APPLICABLE		
5.2			

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	Homework	--	10%
2	Midterm 1 Exam	--	20
3	Midterm 2 Exam	--	20
4	Final Exam	16	50%
	Total	100%	

#### 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)
<ul style="list-style-type: none"> <li>• <b>We have faculty members to provide counseling and advice.</b></li> <li>• <b>Office hours: During the working hours weekly.</b></li> <li>• <b>Academic Advising for students.</b></li> </ul>

#### E. Learning Resources

1. List Required Textbooks
1- J. D. lee, Concise Inorganic Chemistry, Van Nostrand Reinhold Company, 1992, New York.
2. List Essential References Materials (Journals, Reports, etc.)
<ul style="list-style-type: none"> <li>• Lecture Hand outs available on the coordinator website.</li> </ul>

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

F. A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry, A comprehensive text, 1988, John Wiley & Sons.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

- <http://www.chemweb.com>
- <http://www.sciencedirect.com>
- <http://www.rsc.org>

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

#### 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.)

- **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)

- **No other requirements.**

#### G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

Complete the questionnaire evaluation of the course in particular.

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

- **Observations and the assistance of colleagues.**
- **Independent evaluation for extent to achieve students the standards.**
- **Independent advice of the duties and tasks.**

3 Processes for Improvement of Teaching

- Workshops for teaching methods.
- Continuous training of member staff.
- Review of strategies proposed.
- Providing new tools for learning.
- The application of e-learning.
- Exchange of experiences internal and external.

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)

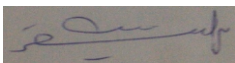
- Check marking of a sample of exam papers, or student work.
- Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.

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

- Periodic Review of the contents of the syllabus and modify the negatives.
- Consult other staff of the course.
- Hosting a visiting staff to evaluate of the course.
- Workshops for teachers of the course.

Faculty or Teaching Staff: Dr. Sawsan Al-Ashqar

Signature:



Date

Report

Completed: 2016

Received by: Dr Hatem Altass Department Head

Signature: \_\_\_\_\_ Date: \_\_\_\_\_