Kingdom of Saudi Arabia

The National Commission for

Academic Accreditation & Assessment

Course Specifications

Selected Topics in Inorganic Chemistry

(402429-2)

Institution: Umm Al-Qura University	Date of Report: 1436/1437
College/Department : Faculty of Applied Science / Chemistry Department	

2016

A. Course Identification and General Information

1. Course title and code: Selected Topics in Inorganic Chemistry (402429-2)
2. Credit hours: 2 (theoretical)
3. Program(s) in which the course is offered. Chemistry program (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: Dr. Khadega Mostafa
5. Level/year at which this course is offered: seventh/fourth
6. Pre-requisites for this course (if any): Mechanism of Reactions and spectroscopy (402327-2)
7. Co-requisites for this course (if any): Nothing
8. Location if not on main campus: **All campus (El-Abedyah, El-Zaher and Elaziziah)**
9. Mode of Instruction (mark all that apply)

a. Traditional classroom		What percentage?	
b. Blended (traditional and online)	■	What percentage?	100
c. e-learning		What percentage?	
d. Correspondence		What percentage?	
f. Other		What percentage?	

Comments:

B Objectives

1. What is the main purpose for this course? - Study the basic concepts of the chemistry of oxygen anions poly-nuclear for some transition and non-transition elements and their different uses. - Study the magnetic properties of the transition metal and their complexes. - Study the nomenclature of poly-homogeneous anions and poly-heterogeneous anions. - Study an introduction to structural inorganic chemistry and the different geometries.
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) - E-Learning System is being introduced. - Students can download course material which can be helpful for the students learning. - For the research, use internet such as Wikipedia, Google ....etc. - Interpersonal skills, relating to the ability to interact with other people and to engage in team-working through group discussion. - Problem solving skills, relating to qualitative and quantitative information.

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
Anionic poly-central ooxygen 's: silicates , borates and condensing or crystalline -Phosphates	0.5	1
Poly-nuclear of transitional elements	1	2
Poly-Tungstate - Poly-Vanadidate	1	2
Poly-hetero acids	1	2
Structural configuration of homo poly- anionic and hetero poly-anionic	0.5	1

Nomenclature of poly-homogeneous anions and poly-heterogeneous anions	1	2
Condensation of inorganic compounds in solution	1	2
Mass elements: SP	1	2
Magnetic properties of transition elements and their complexes: para-, dia- and ferromagnetic as well as, the methods of the magnetic moment measurements for various complexes	1	2
Metal-Metal bonds and the cluster and cage geometry of transition metal complexes and prove the structural formula	2	4
Gold(III)complexes and its organometallic compounds; preparation and structural characterization processes	1	2
Transition metal ion complexes with phosphorus (III) ligands; preparation methods and their economic importance	1	2
Phosphorus complexes, arsenic and antimony as donor atoms	2	4
Introduction to structural inorganic chemistry and the different geometries	1	2

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	4	0	0	0	34
Credit	2	0	0	0	0	2

3. Additional private study/learning hours expected for students per week. 8

- Assignments 4 Hrs
- Tutorials 4 Hrs

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

- Brief summary of the knowledge or skill to develop;

- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
-The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Learn students the structural building of different unusual compounds such as : poly anionic or poly nuclear compounds	- Class room lectures - Assignments - Individual handwritten assignments require use of library reference material and web sites to identify information required to complete tasks. - E-learning through university website	- Written tests - assess the effective participation of students during a lecture presentation - the duties given to e-learning site.
1.2	Take a clear impact about some SP compounds		
1.3	know the magnetic properties of different compounds		
1.4	learn about luster and cage geometry of transition metal complexes		
1.5	learn elaborately some important gold compounds		
2.0	**Cognitive Skills**		
2.1	Able to understand the basic concepts and principles of transition metals chemistry and the behavior of luster and cage geometry	Making connections between different concepts across the domains. - Assigning research questions that can be answered through collecting and analyzing data. - Summarizing the findings of the online research - Using the instructor's webpage learning activities.	- Assignments, Midterm Exams and Final examination at the end of semester. - Solving general chemistry problems related to qualitative and quantitative information at the end of each topic. - Individual
2.2	able to deduce the geometry and molecular structure of different inorganic compounds		
2.3	Deduct, Memory, Self-regulation, and Motor executive functions		
2.4	Interpret, and analyze mystery issues related to topics		
2.5	compare between knowledge		
2.6	Demonstrate good understanding of basics and advanced chemical principles		

			assignments or oral exam for developing/solving a task
3.0	**Interpersonal Skills & Responsibility**		
3.1	Able to self learn	-Using PowerPoint (it's easy to cover more material quickly). - Group discussion - Online workshops	-Assessment of group assignment includes component for individual contribution. - Providing feedback. - Encouraging self-assessment during the learning process
3.2	Encourage students to use online resources		
3.3	Use the internet to collect statistical data		
3.4	UseMicrosoft Office (e.g. Excel, Microsoft Access, front page) to analyze data and prepare statistical reports		
4.0	**Communication, Information Technology, Numerical**		
4.1	Deal with computers skills	- Debates - Group working. - Student assignments for writing and presenting skills for general chemistry concepts	- Instructor's feedback - Final and midterms exams include different problems need numerical and technical skills - Assessments of student's assignments
4.2	Communicate through teamwork		
4.3	Collaborate to finish team assignments		
4.4	Present reports on their reading		
4.5	Make relationships between the knowledge		
5.0	**Psychomotor:** Not Applicable		

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) - The faculty member has 2 hours per week for these cases

E. Learning Resources

1. List Required Textbooks -C. W. Wood And A. K. Holliday, Inorganic Chemistry, Butterworth-London 5th Edition 1989
2. List Essential References Materials (Journals, Reports, etc.) - F. Albert Cotton and G. Wilkinson, Advanced Inorganic Chemistry, A comprehensive Text, John wiley & Sons, New York, 1980 -C. W. Wood And A. K. Holliday, Inorganic Chemistry, Butterworth-London 5th Edition 1989
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - E. Huheey, E. A. Keiter and R. L. Keiter, Inorganic Chemistry: Principle of Structures and Reactivity, Haper Collins College, 4th Edition, 1993. For part one (Inorganic) - James E. House, Inorganic Chemistry, Elsevier Inc., 1st edition, 2008, printed in Canada -U. Muller, “Inorganic Structural Chemistry”, 2nd, John Wiley & Sons, New York, 2006
4. List Electronic Materials (eg. Web Sites, Social Media, etc.) 1- http://scholle.oc.uni-kiel.de/herges/modeling/gliederung.html 2- http://chem-faculty.ucsd.edu/trogler/GroupTheory224/Grouptheory.html 3- " http://onlinelibrary.wiley.com/book/10.1002/3527600825) 4- http://caltechbook.library.caltech.edu/100/1/Langford_Lsp.pdf) 5- http://www.chem.ox.ac.uk/icl/dermot/mechanism1/

5. Other
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. - Isisdraw and Chemdraw and Chemoffice -MS-Office Software http://scholle.oc.uni-kiel.de/herges/modeling/gliederung.html http://phycomp.technion.ac.il/~ira/types.html

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.) - Number of seats in each class room 40 -Accessories – Overhead projector and data show

2. Computing resources (AV, data show, Smart Board, software, etc.) - MS-Office Software and Internet connection
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Data show Computer for individual students Internet access Isisdraw and Chemdraw and Chemoffice

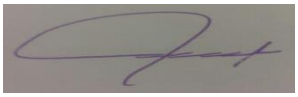
G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching - Confidential completion of standard course evaluation questionnaire. - Focus group discussion with small groups of students.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor - Observations and assistance from colleagues, independent assessment of standards achieved by students, - Independent advice on assignment tasks, etc.
3 Processes for Improvement of Teaching

- Developing the lectures periodically - Workshops on teaching methods. - Review of recommended teaching strategies.
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) - Meetings are conducting with teachers for checking the grading of the exams.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. -Periodic revision of the course from concerned parties in the department and college, and improving it according to what is known in distinguished universities worldwide. - Perform the necessary changes based on the feedback from the workshops, conferences, and seminars recommendations. - Perform the necessary changes based on the feedback from the experts in the field and faculty members.

Faculty or Teaching Staff: Dr. Khadega Mostafa

Signature:  **Date Report Completed: 12/ 2/ 1437 H ; 24/11/2015**

Received by: **Dean/Department Head**

Signature: _____ **Date:**