



Course Specifications

Institution:	Majmaah University college of education- Zulfi
Academic Department :	Department of chemistry
Programme :	Bachelor degree of chemistry
Course :	inorganic chemistry(transition elements)
Course Coordinator :	Enas Aljohani
Programme Coordinator :	Dr.gehan alaemary
Course Specification Approved Date :	25/ 12 / 1436 H□



A. Course Identification and General Information

1 - Course title : inorganic chemistry (transition elements)	Course Code: CHEM 322
2. Credit hours : (4)	
3 - Program(s) in which the course is offered: Bachelor degree of chemistry	
4 – Course Language : Arabic language	
5 - Name of faculty member responsible for the course: Enas Aljohani	
6 - Level/year at which this course is offered : (6) Level	
7 - Pre-requisites for this course (if any) : • CHEM 122	
8 - Co-requisites for this course (if any) : <input type="checkbox"/>	
9 - Location if not on main campus : Majmaah University (college of education- Zulfi) <input type="checkbox"/>	
10 - Mode of Instruction (mark all that apply) <input type="checkbox"/>	
A - Traditional classroom <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/> 40 % <input type="checkbox"/>
B - Blended (traditional and online) <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/>
D - e-learning <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/> 60 % <input type="checkbox"/>
E - Correspondence <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/>
F - Other <input type="checkbox"/>	<input type="checkbox"/> What percentage? <input type="checkbox"/>
Comments : <input type="checkbox"/>	

B Objectives

What is the main purpose for this course?

This course is aimed to give a solid foundation in the areas of inorganic (transition metal) It provides the students with a thorough understanding of the chemistry of d- and f-block elements and covers the basic concepts in coordination chemistry this course also focuses on the chemistry of the fourteen elements after lanthanum, regarded as the lanthanides, and the fourteen elements after actinium known as the actinides Topics to be covered include the inner transition elements and their position in the periodic table; their extraction; methods of preparation and uses; oxidation States, chemical properties; color and spectra properties magnetic Properties, size contraction and a comparison of the two series.



Briefly describe any plans for developing and improving the course that are being implemented :

1- Electronic materials and computer based programs have been utilized to support the lecture course material.

2-The course material was posted on the website that could be accessed by the students enrolled in the course only.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
<ul style="list-style-type: none"> General features of transition metal chemistry. Position in the periodic table and the importance of transition metals . D- block elements properties and f- block elements properties. The electronic structures of transition metals. Variable oxidation state (number). The formation of complex ions. The formation of colored compounds. Catalytic activity and magnetic properties of Transition metal compounds. 	3	12

<ul style="list-style-type: none"> • First transition series 3d series • Chemistry of Yttrium and Scandium. • Properties of scandium and Yttrium compounds. • Chemistry of titanium – vanadium – chromium – magnesium – iron- cobalt – nickel – platinum- copper 	3	12
<ul style="list-style-type: none"> • Crystal field theory • Valence bond theory 	2	8
<p>Chemistry of Lanthanides</p> <ul style="list-style-type: none"> • position in periodic table • abundance, extraction and uses • oxidation states • chemical properties • magnetic properties • size contraction • Electronic absorption spectra • Separation of lanthanides 	3	12
<p>Chemistry of Actinides</p> <ul style="list-style-type: none"> • position in periodic table • abundance, extraction and uses • oxidation states • chemical properties • magnetic properties • size contraction • Electronic absorption spectra • Separation of lanthanides 	3	12





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

<input type="checkbox"/>	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	4 <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	56 <input type="checkbox"/>
Credit	4 <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4 <input type="checkbox"/>

☐

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

2

☐

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	Knowledge By the end of this course the students will be able to:		
1.1	<ul style="list-style-type: none"> Show the main aspects of the chemistry of Transition elements (d- block and f- block) draw the key features of coordination compounds Make accurate statements about facts, concepts and relationships relating to Inorganic chemistry Use knowledge of Inorganic Chemistry to explain observations and phenomena 	Lectures Discussion Q&A Homework assignments	In class quizzes Major and final exams
1.2	Define transition metal ions, paramagnetic elements, Lanthanides, Actinides.		



	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.3	Show the Position of d –f block elements in the periodic table.		
1.4	Name the elements of 3d series.		
1.5	Understand the differences and similarities of the two groups of inorganic elements.		
1.6	List characteristic properties of transition elements.		
1.7	List the difference between d block elements and f block elements		
2.0	Cognitive Skills By the end of the course students should be able to:		
2.1	Use the knowledge of transition metal to solve problems.	Lectures Discussion Q&A Homework assignments	In class quizzes Major and final exams
2.2	Explain the existence of variable oxidation number in ions of transition elements		
2.3	Distinguish between lanthanides and actinides.		
3.0	Interpersonal Skills & Responsibility By the end of the course students should be able to:		
3.1	<ul style="list-style-type: none"> - Work independently and as part of a team. - Acquire the skill of respect colleagues 	create a PowerPoint presentation using Microsoft PowerPoint as a group assignment	Direct observation Assessment of group assignment



	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
4.0	Communication, Information Technology, Numerical By the end of the course students should be able to:		
4.1	<ul style="list-style-type: none"> • Use software and Surf internet for course contents. • Use computational tools • Report writing 	Incorporating the use and utilization of computer in the course requirements Encourage students to use online and library resources	Evaluating the written reports
4.2	Effective communication both oral and written.		
5.0	Psychomotor		
5.1			

5. Schedule of Assessment Tasks for Students during the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	Class activates (in class quizzes, homework and Presentation)	Weekly	20%
2	Major exams	7 th	20%
3	Final exam		60%

D. Student Academic Counseling and Support

- Benefit from the counseling hours
- Communicate with students

E. Learning Resources





1. List Required Textbooks :

- Inorganic Chemistry, Second Edition [James E. hehe]

2. List Essential References Materials :

- Chemistry: Principles and Reactions by William L. Masterton, Cecile N. Hurley, Hardcover: 756 pages, Publisher: Brooks Cole, 5 edition, 2003
- Chemistry, 7th edition , Chang, 2006

3. List Recommended Textbooks and Reference Material :

- Chemistry: Matter and Its Changes, James E. Brady, Fred Senese
- General Chemistry: Principles and Modern Applications. 8th Edition by: Petrucci, Harwood, Herring
- Chemistry, 5th edition by Mortimer

4. List Electronic Materials :

- Websites on the internet that are relevant to the topics of the course
- Course-Lectures as videos (e.g. on YouTube) from Top (high ranked)

5. Other learning material :

Multi media associated with the text book and the relevant websites

F. Facilities Required

1. Accommodation

- Lecture room with at least 35 seats
- Projector - interactive whiteboard

2. Computing resources

Computer room containing at least 20 systems

3. Other resources

Availability of equipment relevant to the course material





G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Course evaluation by student
- Students- faculty meetings

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

- Peer consultation on teaching
- Departmental council discussions
- Discussions within the group of faculty teaching the course

3 Processes for Improvement of Teaching :

- Conducting workshops given by experts on the teaching and learning methodologies
- Periodical departmental revisions of its methods of teaching

4. Processes for Verifying Standards of Student Achievement

- Providing samples of all kind of assessment in the departmental course portfolio of each course
- Assigning group of faculty members teaching the same course to grade same questions for various students. Faculty from other institutions are invited to review the accuracy of the grading policy
- Conducting standard exams such as the American Chemical Society exams or others.

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



- The course material and learning outcomes are periodically reviewed and the changes to be taken are approved in the departmental and higher councils.
- The head of department and faculty take the responsibility of implementing the proposed changes.

Course Specification Approved



Department Official Meeting No (3) Date 25 / 12 / 1436 H

Course's Coordinator ☐

Name : ☐ Enas Aljohani ☐

Signature : ☐ ...Enas

Date : ☐ 25/ 12 / 1436 H ☐

☐

☐ **Department Head** ☐

☐ **Name :** ☐ Dr.gehan alaemary

☐ **Signature :** ☐ Gehan

☐ **Date :** ☐ 25/ 12 / 1436 H ☐