اسم المقرر:	كيمياء العناصر الانتقالية التناسقية
رقم المقرر:	CHEM 242
اسم ورقم المتطلب السابق:	كيمياء المجموعات الرئيسية CHEM 241
اسم ورقم المتطلب المرافق:	لا يوجد
مستوى المقرر:	المستوى الرابع
الساعات المعتمدة:	3

Module Title:	Transition metals and coordination chemistry
Module ID:	CHEM 242
Prerequisite (Co-requisite) :	CHEM 241
Co-requisite :	No requests
Course Level:	Fourth Level
Credit Hours:	3 Credit Hours

Module Description وصف المقرر :

The course introduces the *d*-Blocks chemistry and their coordination compound, structure, oxidation number, electronic configuration and coordination number. The main emphasis will be on the fundamental and the formation of coordination compounds, their structure, magnetics properties and *d*-orbital splitting. Two lecture hours and two hours lab per week. Three Credit hours. Prerequisite CHEM 241

Module Aims أهداف المقرر :

1	**This course aims to introduce the concepts of *d*-Blocks chemistry to students with the basic principles of Coordination Chemistry**	

Learning Outcomes: By the end of my course, students should be able to

1.1.1	**Demonstrate knowledge and understanding of essential principles relating to Transition Metal Complexes**	
1.2.2	**Describe the d-Orbital and Geometry of Coordination Compounds**	
2.1.3	**Explain the Key feature of Coordination Compound**	

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2.2.4	Apply knowledge of fundamental Coordination compound to the Crystal theory.	
3.1.5	Work independently and as part of a team.	
4.1.6	Able to use a computer as a tool in writing, drawing chemical structures and Saudi Digital Library.	
4.1.7	Use laboratory tools and security and safety tools properly	

محتوى المقرر: Course

Contents:

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
8	4	Introduction and Background Periodic Trends of Transition Metals Formation of Transition Metals Complexes 1. Stability of Complexes 2. Hard/Soft Acid/Base Theory 3. Chelate and Macrocyclic effect 4. Charge effect
2	1	Key Feature of Coordination chemistry 1. Oxidation numbers and electronic Configurations 2. Coordination numbers 3. The variety of structures
4	2	Fundamental of Coordination Compounds Coordination Chemistry nomenclature. Coordination Compound Geometries.
6	3	Theory of Coordination compound 1. Crystal Field theory. 2. Bonding models for d-blocks complexes. 3. d-Orbital Occupancy for Complexes.
4	2	Crystal Field stabilization energies (CFSE) 1. Energetic lattice enthalpies

		2. Structural- Ionic radial
		3. John Teller distortion
4	2	Origins of Color in Transition Metals Complexes. Magnetism of Transition Complexes
2	1	Molecular Orbitals approach to Bonding in Transition Metals Complexes.
30	15	Total
		Lab
6	3	Synthesis of Tetraammine copper(II) sulfate monohydrate and Determination of structural Formula.
6	3	Synthesis of nitro-and[nitritopentammine cobalt (III)] Chloride and Determination of structural Formula.
4	2	Synthesis of Trans-dichlorobis(ethylenediamine) Cobalt (III) Chloride
4	2	Synthesis of *tris*(acetylacetonato) iron(III).
6	3	Synthesis of potassium tris(oxalato)chromium(III) trihydrate and Determination of structural Formula.
26	13	Total

الكتاب المقرر والمراجع المساندة: Textbook and References:

اسم الكتاب المقرر Textbook title	اسم المؤلف (رئيسي) Author's Name	اسم الناشر Publisher	سنة النشر Publishing Year	ISBN
d-Block Chemistry (Oxford Chemistry Primers)	Mark J. Winter	Oxford University Press	2001	ISBN 0-19-855696-9.

اسم المرجع Reference	اسم المؤلف (رئيسي) Author's Name	اسم الناشر Publisher	سنة النشر Publishing Year	
Inorganic Chemistry (4th Edition)	Housecroft, Catherine, Sharpe	Pearson	2012	ISBN-10: 0273742752

* يتم تعبئة معلومات المقرر فقط باللغتين العربية والانجليزية وباقي المعلومات بلغة التدريس المعتمدة ويكرر لكل مقرر في الخطة الدراسية

* Course Information should be filled in Arabic and English. Other information should be filled using the approved teaching language at the college.

جامعة المجمعة
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