جامعة : المنصورة

كـــلية : العلوم

قسم / الكيمياء

توصيف مقرر دراسى

١-بيانات المقرر		
الرمز الكود :ك٤٢١	**أسم المقرر** :Inorganic; F-block, magneto, gp. theory)	**المستوى : الرابع**
البرنامج : الكيمياء	**عدد الوحدات الدراسية: ٢ نظرى : ٢ تمارين:- عملى:-**	

٢- هدف المقرر:	**For students undertaking this course, the aims are to:** • Introduce the basic concepts of organometallic compounds and magnetochemistry. • Study of the electronic configuration of lanthanides and actinides. • Study the chemical properties and methods of separation of lanthanides and actinides. • Study the application in industry of lanthanides and actinides. • Introduce an idea about the symmetry and group theory. Acquire students the skills of using IT and communication technology and using scientific literature and preparing technical reports.
٣- المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- list the different classes of organometallic compounds. a2- describe the electronic configuration of lanthanides and actinides. a3- mention the postulations of the group theory.
ب-المهارات الذهنية	**b- Intellectual Skills: On completing this course, students will be able to:** b1- outline an application of organometallic compounds in homogeneous catalytic reactions. b2- suggest appropriate tools for the separation of lanthanides and actinides. b3- predict the type of symmetry of a molecule.
ج- المهارات المهنية	**c-Professional and Practical Skills: On completing this course,**

students will be able to: c1- prepare technical reports using scientific literature.	**الخاصة بالمقرر:**
d-General and Transferable Skills: On completing this course, students will be able to: d1- Use IT and web search engines for collecting information	**د- المهارات العامة :**
Organometallic compounds and magnetochemistry: • Non transition metal compounds • Alkene, delocalized carboxylic groups • Alkyne, allyl and carbene compounds • Nomenclature- application in homogeneous catalytic reactions • Magnetic susceptibility- paramagnetism, diamagnetism, ferromagnetism and anti ferromagnetism-measurement of magnetic moments F-block elements (lanthanides and actinides): • Electronic configuration • Chemical properties and methods of separation • Application in industry Symmetry and introduction to group theory: • Symmetry of molecules- collections of symmetry elements • The point group- transformation matrices and symmetry species • Character tables deduction of the symmetry properties of orbital and vibrations of molecules Effect of symmetric field on an atom or ion	**٤- محتوى المقرر:**
5.1 - Lectures. 5.2 – Tutorial 5.3 - Laboratory work. 5.4 - Home works, reports and discussion groups	**٥- اساليب التعليم والتعلم:**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:**
	٧- تقويم الطلاب :
7- Student Assessment Methods **Final exam** | **to assess** | a1-a3, b1-b3	**أ- الأساليب المستخدمة :**

Oral exam	**to assess**	a1-a3, b1-b3		
Mid-term exam	**To assess**	a1-a3, b1-b3		
Report	**to assess**	c1,d1		

ب- التوقيت :

Assessment Schedule

Assessment 1	**Week #final exam**	**Week 14**
Assessment 2	**Week #oral exam**	**Week 14**
Assessment 3	**Week #mid-term exam**	**Week 4,8,12**
Assessment 4	**Week #report**	**Week 10**

ج- توزيع الدرجات :

Weighting of Assessments

Final-Term Examination	**80%**
Oral Examination	**10%**
Practical Examination	**0%**
Semester work	**0%**
Mid-term examination	**10%**
Other types of assessment	**0%**
Total	**100%**

٨- قائمة الكتب الدراسية والمراجع :

أ- مذكرات:

Organometallic Compounds - F-block Elements - Symmetry and Group Theory

ب- كتب ملزمة

ج- كتب مقترحة :

Physical chemistry, Peter Atkins, Julio de Paula, Oxford University Press, New York, Oxford, 2006.

Physical chemistry, Thomas Engel, Philip Reid, Publisher: Pearson Benjamin

Cummings, San Francisco, 2006.	
http://www.d.umn.edu/~pkiprof/ChemWebV2/index2.html	د- دوريات علمية أو نشرات..

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Organometallic compounds and magnetochemistry:					
• Non transition metal compounds	1-2	a1	b1		
• Alkene, delocalized carboxylic groups	3-4	a1	b1		
• Alkyne, allyl and carbene compounds	5-6	a1	b1		
• Nomenclature- application in homogeneous catalytic reactions	7-8	a1	b1	c1	d1
• Magnetic susceptibility- paramagnetism, diamagnetism, ferromagnetism and anti ferromagnetism-measurement of magnetic moments	9-13	a1	b1	c1	d1
F-block elements (lanthanides and actinides):					
• Electronic configuration	1-4	a2	b2		
• Chemical properties and methods of separation	5-8	a2	b2		
• Application in industry	9-13	a2	b2	c1	d1
Symmetry and introduction to group theory:					
• Symmetry of molecules- collections of symmetry elements	1-3	a3	b3	c1	d1
• The point group- transformation matrices and symmetry species	4-6	a3	b3		

• Character tables deduction of the symmetry properties of orbital and vibrations of molecules	7-9	a3	b3	c1	d1
• Effect of symmetric field on an atom or ion	10-13	a3	b3		

أستاذ المادة : أ.د./سحر ابراهيم حامد مصطفى

رئيس مجلس القسم العلمي : أ.د /سالم السيد سمرة