جامعة : المنصورة
كـــلية : العلـــوم
قـســـم:الكيمياء

توصيف مقرر دراسى

١- بيانات المقرر		
الرمز الكودى :(1) Chemistry Chem 141	أسم المقرر: Physical chemistry	المستوى: الأول (بيولوجي)
التخصص: علوم البيئة	عدد الوحدات الدراسية: ٧ نظرى ٣ تمارين ٠ عملى ٤	

٢- هدف المقرر:	For students undertaking this course, the aims are to: • Introduce some basic concepts of physical chemistry. • Introduce the fundamental information about the gaseous state of matters and its laws. • Study the first law of thermodynamics and its applications. • Give students the essential concepts of thermochemistry and thermochemical equations. • Study the principles of chemical equilibrium. • Introduce the main information about the electrical conductance and the phenomena of electrolysis. • Enable the students to have an idea about both the colloidal and the solid states of matter.
٣- المستهدف من التدريس المقرر:	
ا.المعلومات والمفاهيم:	a- Knowledge and Understanding : On completing this course, students will be able to: a1- identify the basic concepts of physical chemistry . a2- describe the main theories and laws of thermochemistry, thermodynamics, gases and chemical equilibrium. a3- explain the electrical conductance and its applications.
ب.المهارات الذهنية	b- Intellectual Skills: On completing this course, students will be able to: b1- apply the gases and thermodynamics laws. b2- distinguish different types of thermochemical reactions. b3- employ Le-Chatelier principle to predict the reaction direction. b4- calculate the electromotive force and electrode potential. b5- distinguish between isomorphism and polymorphism.
ج- المهارات المهنية الخاصة بالمقرر:	c-Professional and Practical Skills: On completing this course, students will be able to: c1- deal safely and ethically with chemicals and lab equipments. c2- experimentally determine physical properties of matter. c3- identify acidic or basic radicals of inorganic substance.
د- المهارات العامة :	d-General and Transferable Skills: On completing this course,

students will be able to: **d1- work effectively on solving physical chemistry problems.** **d2- use IT and search for information.** **d3- communicate effectively with their lecturers and colleagues.** **d4- exhibit the sense of beauty and neatness.**	
Gaseous state: • General ideal gas equation • Kinetic theory of gases • Applicability of the ideal gas laws • Liquefaction of gases **Thermodynamics:** • First law of thermodynamics- Application of the first law • Thermochemistry- Thermochemical equations - Hess's law of heat summation **Chemical equilibrium:** • Law of mass action- equilibrium constants • Le Chatelier principle • Equilibrium in homogeneous and heterogeneous gas and liquid systems **Electrical conductance:** • The phenomena of electrolysis • Determination. of conductance • Application- Electromotive force and Electrode potential • Chemical and electrical energy- Cell reaction and E.M.F. • Electrode potential - Electrochemical series **Colloidal state:** • General properties- Preparation and purification **Solid-state:** • Crystallographic systems- Isomorphism- Polymorphism • Application of X- rays. **Experimental:** Qualitative inorganic analysis: Identification of acidic and basic radicals -Identification of simple inorganic liquids.	٤- محتوى المقرر:
4 - Teaching and Learning Methods **4 -١. Lectures using data show and board** **4 -2. Home works,** **4-3. Reports,** **4-4. Discussion groups** **4 -5. Lab work.**	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 :
Student Assessment Methods **Final exam** | **to assess** | **a1-a3, b1-b3**	أ- الأساليب المستخدمة :

Oral exam	to assess	a1-a3, b1-b3	
Practical exam	to assess	c1-c3,d4	
Quizzes	to assess	a1-a3, b1-b3	
Report	to assess	d1-d3	

ب- التوقيت :

Assessment Schedule

Assessment 1	Week #	14
Assessment 2	Week #	14
Assessment 3	Week #	12
Assessment 4	Week #	4, 8, 12
Assessment 5	Week #	10

ج- توزيع الدرجات :

Weighting of Assessments

Final-Term Examination	70
Oral Examination	10
Practical Examination	20
Semester work	0
Other types of assessment	0
Total	100

٨- قائمة الكتب الدراسية والمراجع :

Physical Chemistry authorized by department of chemistry	أ- مذكرات:
Physical chemistry, Peter Atkins, Julio de Paula, Oxford University Press, New York, Oxford, 2006.	ب- كتب ملزمة
Physical chemistry, Thomas Engel, Philip Reid, Publisher: Pearson Benjamin Cummings, San Francisco, 2006. Elements of physical chemistry, Atkins, P. W., Publisher: W.H. Freeman, Oxford University Press, New York, 2005.	ج- كتب مقترحة :
http//www. chemweb.com/	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
• Gaseous state , General ideal gas equation	1	a1, a2	b1, b	c2	d2
• Kinetic theory of gases	2	a1, a2	b1		
• Applicability of the ideal gas laws	2	a1, a2	b1		d3
• Liquefaction of gases	2	a1, a2	b1		
• Thermodynamics: First law of thermodynamics- Application of the first law	3	a1, a2	b1,b2	c2	d2,d3
• Thermochemistry- Thermochemical equations - Hess's law of heat summation	4	a1, a2	b1, b2		
• Chemical equilibrium: Law of mass action- equilibrium constants	5	a1, a2	b3	c2	d1
• Le Chatelier principle	5-6	a1, a2	b3		
• Equilibrium in homogeneous and heterogeneous gas and liquid systems	6	a1, a2	b1	c2	d1,d2,d3
• Electrical conductance: The phenomena of electrolysis	7	a1, a3	b4	c2	
• Determination. of conductance	7	a1, a3	b4	c2	
• Application- Electromotive force and Electrode potential	8	a1, a3	b4	c2	d1,d2,d3
• Chemical and electrical energy- Cell reaction and E.M.F.	8	a1, a3	b4	c2	
• Electrode potential - Electrochemical series	9	a1, a3	b4		
• Colloidal state: General properties- Preparation and purification	10,11	a1	b4	c2	
• Solid-state, Crystallographic systems- Isomorphism- Polymorphism	12	a1	b5		
• Application of X- rays	13	a1	b5		
Practical: Qualitative inorganic analysis: Identification of acidic and basic radicals -Identification of simple inorganic liquids	٢-١١			c1,c2 c3	d4

أستاذ المقرر: أ.د. عبد العزيز السيد فودة

رئيس مجلس القسم العلمى : أ.د. أحمد فوزي العاصمى