

توصيف مقرر دراسي

جامعة : المنصورة
كلية : العلوم
قسم : الكيمياء

١ - بيانات المقرر		
المستوى: الأول	أسم المقرر: أسس الكيمياء الفيزيائية	الرمز الكودي: Chem 141
٢ : عملي	عدد الوحدات الدراسية: ٣ ساعة معتمدة نظري ٢ : تمارين: ١ عملي	التخصص: إحصاء وعلوم الحاسب

<p>For students undertaking this course, the aims are to:</p> <p>1 - Develop the fundamental principles of chemistry and their applications</p> <p>2 - Introduce the principles of gas laws and properties of gases.</p> <p>3 - Outline the basic information of thermochemistry and thermochemical laws.</p> <p>4 - Introduce the principles of solution chemistry and the properties of solution.</p> <p>5 - Outline the basic information of chemical equilibrium and ionic equilibrium</p>	٢ - هدف المقرر :
٣ - المستهدف من تدريس المقرر	
<p>a- Knowledge and Understanding :</p> <p>On completing this course, students will be able to:</p> <p>a1 - Explore the relation between pressure, temperature and volume to form different gas laws.</p> <p>a2 - Learn the basics of thermochemistry.</p> <p>a3- Learn how to interpret graphical representations of physical phenomenon for gases and solution.</p> <p>a4 - Know the principles of solution chemistry.</p> <p>a5- Learn the principles of chemical equilibrium and the factors affecting the equilibrium state for chemical reactions</p> <p>a6 - Explore the Ionic equilibrium and know the relation between pH and pOH and the effect of salt effect and common ion effect on the solubility of sparingly soluble salts.</p>	أ - المعلومات و المفاهيم :
<p>b- Intellectual Skills:</p> <p>On completing this course, students will be able to:</p> <p>b1- derive equations for gas properties</p> <p>b2- uses the principles thermochemistry to solve classical elementary problems</p> <p>b3 - use the principles of solution chemistry to solve problems for finding the concentration of solutions.</p> <p>b4 - apply principles of chemical equilibrium to common chemical reactions.</p> <p>b5 - apply the salt effect and common ion effect on the solubility of sparingly soluble salts.</p>	ب- المهارات الذهنية :
<p>c-Professional and Practical Skills:</p> <p>On completing this course, students will be able to:</p> <p>c1 - describe the various properties of gases</p> <p>c2 - use the thermochemical equations a to determine different thermochemical parameters.</p> <p>c3 - use various relations to prepare solutions with different concentrations</p> <p>c4 - calculate the equilibrium constant for common chemical reactions</p>	ج- المهارات المهنية الخاصة بالمقرر :
<p>d-General and Transferable Skills:</p> <p>On completing this course, students will be able to:</p> <p>d1 - use computer and internet to collect date about scientific topics</p> <p>d2 - communicate with others and express what he understand.</p> <p>d3 - use the computer and software for making presentations</p>	د- المهارات العامة :

1- Gas laws 2- Kinetic theory of gases and real gases 3- Thermochemical equations, Hess law, Heat of combustion and heat of formation 4- Heat capacities and bond energies 5- Solutions, different ways to express concentration of solutions 6- Collegative properties 7- Chemical equilibrium and calculating the equilibrium constant 8- Lechatlier Principle and application to chemical reactions at equilibrium 9- Ionic Equilibrium, Acids and Bases and Buffer solution 10- Salt effect, common ion effect and solubility of sparingly soluble salts 11- practical	- محتوى المقرر :
5.1 - Lecture using white board. 5.2 - data show and internet.	٥- أساليب التعليم و التعلم
6.1 - The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطلاب ذوي القدرات المحدودة
٧- تقويم الطلاب :	
1 - quizzes to assess a1-a5,b1,-b5,c1,-c4 2 - home work assignments to assess a1-a5,b1,-b5,c1,-c4 3 - practical exam to assess c1,-c4 4 - semester work to assess a1-a5,b1,-b5,c1,-c4 5 - final exam to assess a1-a5,b1,-b5,c1,-c4 6 - oral exam to assess a1-a5,b1,-b5,c1,-c4 7 – report to assess d1,d3	أ- الأساليب المستخدمة
Assessment quizzes week4,8,12 Assessment home work exam week every lecture Assessment practical exam week12 Assessment semester work week during the term Assessment final exam week14 Assessment oral exam week14 Assessment report week10	ب- التوقيت
Mid-term Examination 10 % Final Term Examination 60 % Oral Examination 10 % Practical Examination 20 % Semester work 0 % Other types of assessment 0 % Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
	أ- مذكرات:
1 - Physical Chemistry 2 - Physical chemistry, Peter Atkins, Juli de Paula, Oxford University Press, New York, Oxford, 2006.	ب- الكتب ملزمة
1 - Elements of physical chemistry, Atkins, P. W., Publisher: W.H. Freeman, Oxford University Press, New York, 2005.	ج- كتب مقترحة
1 - www.google.com	د- مواقع انترنت

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Gas laws.	1,2	a1,a3	b1	c1	d1
Kinetic theory of gases and real gases.	3	a1,a3	b1	c1	d1
Thermochemical equations, Hess law, Heat of combustion and heat of formation.	4,5	a2	b2	c2	d1
Heat capacities and bond energies.	6	a2	b2	c2	d1
Solutions, different ways to express concentration of solutions.	7	a3,a4	b3	c3	d3
Colligative properties.	8	a3,a4	b3	c3	d3
Chemical equilibrium and calculating the equilibrium constant.	9	a5	b4	c4	d3
Lechatlier Principle and application to chemical reactions at equilibrium.	10	a5	b4	c4	d3
Ionic Equilibrium, Acids and Bases and Buffer solution	11	a6			d2
Salt effect, common ion effect and solubility of sparingly soluble salts	12	a6	b5		d2
practical physical chemistry	1-10			c1-c4	

أستاذ المادة : أ.د. / عصام عرفه حسن

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