

## توصيف مقرر دراسي

جامعة : المنصورة

كلية : العلوم

قسم : الكيمياء

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

٢- هدف المقرر :	
<p><b>For students undertaking this course, the aims are to:</b></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>	
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	<p><b>a- Knowledge and Understanding :</b></p> <p><b>On completing this course, students will be able to:</b></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>a 3- 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>
ب- المهارات الذهنية :	<p><b>b- Intellectual Skills:</b></p> <p><b>On completing this course, students will be able to:</b></p>

b1- derive equations for gas properties b2- uses the principles thermochemistry to solve classical elementary problems b3 - use the principles of solution chemistry to solve problems for finding the concentration of solutions. b4 - apply principles of chemical equilibrium to common chemical reactions. b5 - apply the salt effect and common ion effect on the solubility of sparingly soluble salts.	
<b>c-Professional and Practical Skills:</b> <b>On completing this course, students will be able to:</b> c1 - describe the various properties of gases c2 - use the thermochemical equations a to determine different thermochemical parameters. c3 - use various relations to prepare solutions with different concentrations c4 - calculate the equilibrium constant for common chemical reactions	ج- المهارات المهنية الخاصة بالمقرر :
<b>d-General and Transferable Skills:</b> <b>On completing this course, students will be able to:</b> d1 - use computer and internet to collect data about scientific topics d2 - communicate with others and express what he understand. d3 - use the computer and software for making presentations	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- Colligative 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	- محتوى المقرر :

<b>11- practical</b>			
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	أ- الأساليب المستخدمة
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	
Assessment	quizzes	week4,8,12	ب- التوقيت
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	
Mid-term Examination	10 %		ج- توزيع الدرجات
Final Term Examination	60 %		
Oral Examin ation	10 %		
Practical Examination	20 %		
Semester work	0 %		
Other types of assessment	0 %		
Total	100%		

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
Collegative 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