

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Physical Chemistry I		Module Delivery	
Module Type	Basic learning activities		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	BCE115			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	Dr. Hassan H. Al-Mohammedawi		e-mail	hasan.h@kechbu.uobaghdad.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph.D.
Module Tutor	Noor Ehsan		e-mail	noor.e@kechbu.uobaghdad.edu.iq
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date			Version Number	1.0

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	None		Semester	
Co-requisites module	None		Semester	

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Objectives</b> أهداف المادة الدراسية	<p>The aim of this module is to develop the students' knowledge of the physical chemistry. In this module, students will the study of the underlying physical principles that govern the properties and behavior of chemical systems to use these principles to design separation equipment such as fractional distillation.</p> <p>Thus, this course deals with the following main topics: Gas laws, First law of thermodynamics.</p>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p><b>After studying this course the students will be able to:</b></p> <ol style="list-style-type: none"><li>1) Apply knowledge of physical chemistry to predict the equilibrium composition of reaction mixtures.</li><li>2) Recognize the first law of thermodynamics and calculate enthalpy.</li><li>3) Design different equipment used in biochemical engineering.</li><li>4) Work as a team and provide them with a powerful tool for developing practical skills.</li><li>5) Help students to build confidence in their abilities.</li></ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p><b>Part A-</b> Gas laws, ideal gas law and real gases (deviations from ideal behavior) [28 hrs.]</p> <p><b>Part B-</b> First law of thermodynamics, thermodynamic systems and surroundings, internal energy, enthalpy and thermochemistry [35 hrs.]</p>

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<p>The basic strategies that will be applied to help students learn and understand this module are <b>Cooperative Learning and Active Learning</b> strategies. Using cooperative learning encourages students to work together in small groups to achieve a common goal. It promotes teamwork and communication. In addition, using active learning helps students to participate in the learning process through activities such as discussions.</p>
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<b>Student Workload (SWL)</b> الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>100</b>		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	1hr/6	20% (20)	2,5,8 and 11	LO #1, #2 , #3and #4
	<b>Assignments</b>	1(hr)/5	5% (5)	3 and 9	LO #1, #4
	<b>Projects / Lab.</b>	....	...	...	
	<b>Report</b>	1(hr)/5	5% (5)	3 and 9	LO #1, #2 , #3and #4
<b>Summative assessment</b>	<b>Midterm Exam</b>	2hr	10% (10)	5,10,14	LO #1 - #4
	<b>Final Exam</b>	3hr	0% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
<b>Week 1</b>	Characteristics of Gases , Gas laws
<b>Week 2</b>	Ideal gas law
<b>Week 3</b>	Mixtures of gases
<b>Week 4</b>	Examples
<b>Week 5</b>	Real gases (deviations from ideal behavior)
<b>Week 6</b>	Examples
<b>Week 7</b>	First law of thermodynamics, thermodynamic systems and surroundings,
<b>Week 8</b>	Internal energy

<b>Week 9</b>	Examples
<b>Week 10</b>	Enthalpy
<b>Week 11</b>	Examples
<b>Week 12</b>	Thermochemistry
<b>Week 13</b>	Examples
<b>Week 14</b>	Effect of temperature on standard enthalpy change
<b>Week 15</b>	Examples
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	<ul style="list-style-type: none"> <li>▪ Alberty, R. A., Robert J.S. and Mounji G. B., (2004). Physical Chemistry. 4th ed, John Wiley and Sons.</li> <li>▪ Atkins, P. and De Paula, J., 2018. Physical Chemistry. Oxford: Oxford University Press.</li> </ul>	Yes
<b>Recommended Texts</b>	<ul style="list-style-type: none"> <li>▪ Levine, I., 2009. Physical Chemistry. Boston: McGraw-Hill.</li> </ul>	Yes
<b>Websites</b>		

<b>Grading Scheme</b> مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
<b>Success Group (50 - 100)</b>	<b>A</b> - Excellent	امتياز	90 - 100	Outstanding Performance
	<b>B</b> - Very Good	جيد جدا	80 - 89	Above average with some errors
	<b>C</b> - Good	جيد	70 - 79	Sound work with notable errors
	<b>D</b> - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	<b>E</b> - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 – 49)</b>	<b>FX</b> – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F</b> – Fail	راسب	(0-44)	Considerable amount of work required

**Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54). The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.