



Department of Basic and Applied Science  
Cairo Campus

BA118

Chemical Engineering 1

Fall 2013

Course Outline

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<b>Objective:</b>	<ul style="list-style-type: none"><li>• Teaching the students the simple basics of chemical engineering.</li><li>• Focusing view about the different states of matter with various examples and solving problems.</li><li>• Simple application about the cement industry.</li></ul>																					
<b>Text:</b>																						
<b>Grading:</b>	<p><u>Evaluating system</u></p> <table><tr><td>1- Quiz 1</td><td>3<sup>rd</sup> week</td><td>05 marks</td></tr><tr><td>2- 7<sup>th</sup> Week Exam</td><td></td><td>20 marks</td></tr><tr><td>3- Quiz 2</td><td>10<sup>th</sup> week</td><td>05 marks</td></tr><tr><td>4- 12<sup>th</sup> Week Exam</td><td></td><td>20 marks</td></tr><tr><td>5- Pre- Final (LAB)</td><td></td><td>10 marks</td></tr><tr><td>6- Final Exam</td><td></td><td>40 marks</td></tr><tr><td></td><td><u>Total</u></td><td><u>100 marks</u></td></tr></table>	1- Quiz 1	3 <sup>rd</sup> week	05 marks	2- 7 <sup>th</sup> Week Exam		20 marks	3- Quiz 2	10 <sup>th</sup> week	05 marks	4- 12 <sup>th</sup> Week Exam		20 marks	5- Pre- Final (LAB)		10 marks	6- Final Exam		40 marks		<u>Total</u>	<u>100 marks</u>
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Week of		E V E N T	
1	Feb. 17 <sup>th</sup>	<b>Lecture</b>	Introduction of major chemical terms used in the chemistry and chemical engineering
		<b>Tutorial</b>	Energy and matter, Chemical changes of matter, measurements, conversion factors, temperature scales, Density and specific gravity.
		<b>LAB</b>	As prepared in the laboratory in mother campus
2	Feb. 24 <sup>th</sup>	<b>Lecture</b>	Properties of gases and basic laws and common relation between P,V,T and n
		<b>Tutorial</b>	Gas pressure, Boyle's law, Charel's law, Gay Lussac law, Vapor pressure and boiling point, combined gas law, Avogadro's law, with different examples.
		<b>LAB</b>	As prepared in the laboratory in mother campus
3	Mar. 3 <sup>rd</sup>	<b>Lecture</b>	Ideal gas law ,Dalton;s law with different applications <b>Quiz No. 1 (05 marks)</b>
		<b>Tutorial</b>	Molar volume, universal gas law, partial pressure, gas collected over water ,solving examples about the gases laws
		<b>LAB</b>	As prepared in the laboratory in mother campus
4	Mar. 10 <sup>th</sup>	<b>Lecture</b>	The behavior of real gases
		<b>Tutorial</b>	Deviation of gases from the ideal behavior ,compressibility factor of real gases,
		<b>LAB</b>	As prepared in the laboratory in mother campus
5	Mar. 17 <sup>th</sup>	<b>Lecture</b>	Van Der Waal's treatment of a real gases and simple application about gas liquefaction
		<b>Tutorial</b>	Van der Waal's equation at low pressure, Van der Waal's equation at high pressure, Linda process of liquefaction of gases.
		<b>LAB</b>	As prepared in the laboratory in mother campus
6	Mar. 24 <sup>th</sup>	<b>Lecture</b>	Revision and solving problems about the gases
		<b>Tutorial</b>	Revision sheet 1
		<b>LAB</b>	As prepared in the laboratory in mother campus
7	Mar. 31 <sup>st</sup>	<b>Lecture</b>	<b>Seventh Exam (20 marks)</b>
		<b>LAB</b>	
8	Apr. 7 <sup>th</sup>	<b>Lecture</b>	The liquid state of matter
		<b>Tutorial</b>	Evaporation, liquid vapor pressure, boiling and freezing points, ,
		<b>LAB</b>	As prepared in the laboratory in mother campus
9	Apr. 14 <sup>th</sup>	<b>Lecture</b>	Surface tension and viscosity of liquids
		<b>Tutorial</b>	Classification of liquids according to their surface tension, viscosity coefficient, Ostwald viscometer
		<b>LAB</b>	As prepared in the laboratory in mother campus
10	Apr. 21 <sup>st</sup>	<b>Lecture</b>	The solid state of matter (Corrosion) <b>Quiz No. 2 (05 marks)</b>
		<b>Tutorial</b>	Types of corrosion, mechanism of wet corrosion with simple examples
		<b>LAB</b>	As prepared in the laboratory in mother campus
11	Apr. 28 <sup>th</sup>	<b>Lecture</b>	Cement Industry
		<b>Tutorial</b>	Portland cement, manufacturing process of cement
		<b>LAB</b>	Revision
12	May 5 <sup>th</sup>	<b>Lecture</b>	<b>Twelfth Exam (20 marks)</b>
		<b>LAB</b>	
13	May 12 <sup>th</sup>	<b>Lecture</b>	The multy_component systems
		<b>Tutorial</b>	Classification of solutions, the mass action law, the ionization constant for acids and bases, common ion effect
		<b>LAB</b>	Exam pre final lab.(10 marks)
14	May 19 <sup>th</sup>	<b>Lecture</b>	Acidity and Basicity
		<b>Tutorial</b>	The ionization constant of water, the buffer solution, titration curve for acid and base
15	May 26 <sup>th</sup>	<b>Lecture</b>	Revision
		<b>Tutorial</b>	Revision
16	Jun. 2 <sup>nd</sup>	<b>Final Exam (40)</b>	