

## CHE 407: Separation Processes

<b>Course Instructor</b>	<b>Room</b>	<b>Web-site</b>
Prof: Mohamed El Bashir Abashar	2B 53	<a href="http://fac.ksu.edu.sa/mabashar">http://fac.ksu.edu.sa/mabashar</a>

<b>COURSE SYLLABUS</b>						
Course Title	Course Code	Pre-requisites	Credit hours			
Separation Processes	CHE 407	CHE 318	Th	Tut	Pr	<b>Total</b>
			3	1	2	<b>4</b>
<b>Catalogue Description</b>						
Phase equilibrium, equilibrium stage concept, and application of chemical engineering principles to multistage and differential processes involving separation of chemical components. Design applications in distillation, liquid-liquid and drying.						
<b>Course Objectives</b>						
<b>I. Theory</b>						
1	Ability to perform vapor-liquid equilibrium calculations and to solve phase equilibrium problems: equilibrium curve (y-x), T-x-y diagram, enthalpy concentration diagram.					
2	Ability to formulate and solve design problems involving fractional distillation for binary systems (McCabe –Thiele method, Ponchon-Savarit method) and multi-component distillation (Short-cut method)					
3	Ability to formulate and solve design problems involving differential and flash distillation for binary and multi-component systems					
4	Ability to formulate and solve design problems involving liquid-liquid extraction systems: counter current and cross-current multistage.					
5	Ability to formulate and solve design problems involving drying systems: rate of drying curves, calculation methods for constant-rate drying period, calculation methods for falling-rate drying period, combined convection, radiation and conduction heat transfer in constant-rate period.					
<b>II. Practical</b>						
1	Safety in lab					
2	Design and performing selected experiments					
3	Report writing					
4	Final oral and written exam					

<b>Learning Resources</b>		
<b>I. Textbook</b>		
1	Transport Processes and Unit Operations	Christie J. <b>Geankoplis</b>
<b>II. References</b>		
2	Separation Process Principles	-J. D. <b>Seader</b> , - Ernest J. Henley
3	Mass-Transfer Operations	Robert E. <b>Treybal</b>
4	Unit Operations of Chemical Engineering	-Warren L. <b>McCabe</b> - Julian C. <b>Smith</b> -Peter Harriott
5	Principles of Unit Operations	- Alan S. <b>Foust</b> -Leonard A. Wenzel -Curtis W. Clump -Louis Maus -L. Bryce Andersen
6	Chemical Engineering vol.2	- J. M. <b>Coulson</b> -J. F. Richardson -J. R. Backhurst -J.H. Harker
7	Separation Processes	C. Judson <b>King</b>
<b>III. Web Sites</b>		

<b>Grading</b>								
Attend.	Quiz	Tut	Pr	Test 1	Test 2	Course work	Final Exam	Total
<b>5</b>	<b>5</b>	<b>10</b>	<b>10</b>	<b>15</b>	<b>15</b>	<b>60</b>	<b>40</b>	<b>100</b>

<b>Tutorial Policy</b>	
1	<b>One <u>week</u> is given for the submission. Late submission is <b>NOT</b> accepted.</b>
2	<b>The tutorial must be submitted to Prof. Abashar to be signed.</b>
3	<b>The tutorial must be written in A4 using <b>ink</b> excepts diagrams and all pages must be</b>

	numbered. A template front page must be used.
4	Each problem must be started in a new page.
5	<p><b>Plagiarism</b> is defined: “<i>The practice of taking someone else's work or ideas and passing them off as one's own</i> [1]”. <b><u>COPYING OF TUTORIALS IS NOT ALLOWED. THE PENALTY IS ZERO MARK FOR ALL STUDENTS.</u></b></p> <p>[1]<a href="https://www.google.com/search?q=definition+of+Pagiarism&amp;oq=definition+of+Pagiarism&amp;aqs=chrome..69i57.690482j1j7&amp;sourceid=chrome&amp;ie=UTF-8">https://www.google.com/search?q=definition+of+Pagiarism&amp;oq=definition+of+Pagiarism&amp;aqs=chrome..69i57.690482j1j7&amp;sourceid=chrome&amp;ie=UTF-8</a></p>

### Practical Policy

1	Students are required to wear lab coats and follow the safety rules in the lab.
2	Students are required to be in the lab at the specified time. Late students will <b><u>NOT</u></b> be allowed to attend the practical.
3	Students are required to study the experiment theory before the practical.
4	Students must write the practical report following the standard technical report format. Late submission is <b><u>NOT</u></b> accepted.

### Class Room Policy

1	Students are required to attend the class at the right time. Late students are <b><u>NOT</u></b> allow to attend the class. Five marks will be assigned to the attendance. The attendance record will be displayed every week. If the student absence is greater than 25% , the student will be debarred from the final exam.
2	Students are required to bring the textbook to the class.
3	Students are required to switch off their mobiles.

## **Office Hours**

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|----------|---|
| <b>1</b> | <b>The time table of the instructor will be shown in the web site.</b>                        |
| <b>2</b> | <b>The students are advised to consult the instructor at the office hours for assistance.</b> |