CHE 201 Chemical Engineering Principles I

Date:5-5-2006

Instructor: Ahmed E. Abasaeed **Total credits**: 3 Lecture Cr: 3 Lab Cr: 0 Recitation Cr: 1

Pre Req(s): Chem 101 **Co Req(s):**

Contribution to professional component: Math and Basic science Cr: 3 Engineering Cr: 0 General Education Cr: 0

Catalog Data:

Familiarize the students with basic concepts and procedures to perform material balances on single, multiple units for both non-reactive and reactive processes

Textbook:

Felder R. M. and Rousseau, R. W. "Elementary Principles of Chemical Processes" John Wiley & Sons, 3rd ed.

Topics covered

1. Origin of Chemical Engineering and role of Chemical Engineer (**3 classes**).
2. Introduction to Engineering Calculations (Units, dimensions and basic definitions. Conversion of units. Dimensional homogeneity and dimensionless quantities. Mathematical tools and problem solving techniques). (**8 classes**)
3. Processes and process variables (Mass, volume, temperature, pressure, flow rate, chemical composition) (**8 classes**)
4. Material balances (Application of principles of mathematics, physics and chemistry in material balances in single unit, multiple inputs/outputs, multiple units, recycle, bypass, purging in non-reactive and reactive processes, combustion reactions). (**26 classes**)

Objectives	a	b	c	d	e	f	g	h	i	j	k		L	M
1. Able to understand the role of Chemical Engineers and the difference between Chemical Engineers and chemists.						1		1	1					
2. Able to convert quantities from one set of units to another quickly and accurately.	3				1									
3. Able to define and determine properties of process streams including fluid density, flow rate, chemical composition (mass and mole fractions, concentrations), fluid pressure, and temperature.	3				1									
4. Able to represent and interpret process data		1												
5. Able to draw and label process flowcharts from verbal process descriptions.	3		1											
6. Able to perform material balances on single and multiple units with recycle and by-pass for nonreactive processes.	3				2									
7. Able to perform material balances on single and multiple units with recycle and by-pass for reactive processes	3				2									
8. Able to perform combustion reaction's calculations	3				2									

a-k: ABET criteria, Key: 3: strong 2: moderate 1: weak