CHE 201 Chemical Engineering Principles I

Instructor: Ahmed E. Abasaeed

Pre Req(s): Chem 101

Contribution to professional component: Math and Basic science Cr: 3

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:

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
1. Able to understand the role of Chemical Engineers and the difference between Chemical Engineers and chemists.
2. Able to convert quantities from one set of units to another quickly and accurately.
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.
4. Able to represent and interpret process data
5. Able to draw and label process flowcharts from verbal process descriptions.
6. Able to perform material balances on single and multiple units with recycle and by-pass for nonreactive processes.
7. Able to perform material balances on single and multiple units with recycle and by-pass for reactive processes
8. Able to perform combustion reaction’s calculations

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