BTech Preparatory Unit (BPU) in Chemical Engineering

Syllabus

1. Steady State Mass Balance **(6 hours)**
   a. Steady state and unsteady state
   b. Material balance for physical process
   c. Material balance for chemical process

2. Vapor-Liquid Equilibrium **(6 hours)**
   a. Vapor Pressure
   b. Ideal Gas Mixture and Ideal Solution
   c. Ideal Vapor-Liquid Equilibrium (Raoult's Law)
   d. Phase Diagram
   e. Non-Ideal Vapor Liquid Equilibrium (Henry's Law)

3. Chemical Reaction Kinetics **(6 hours)**
   a. Reaction Mechanism
   b. Rate Laws
   c. Order of Reaction (Zero-order, first-order and second-order reactions)
   d. Effect of Temperature on Reaction Rates

4. Chemical Bonding and Molecular Structures **(9 hours)**
   a. Ionic Bonding and Covalent Bonding
   b. Electronegativity and Bond Polarity
   c. Molecules, Ions, Molecular Shape and Orbitals

5. Chemical Reaction of Organic Compounds **(9 hours)**
   a. Alkanes, Alkenes, and Alkynes
   b. Electrophilic and Nucleophilic Reactions
   c. Alcohols, Ethers, and Epoxides
   d. Carbonyl, Carboxyl, and Amine Compounds