

PCCH4203 **Chemical Process Calculations**

Module-1

Units & dimensions, The chemical equation & stoichiometry, concept of limiting & excess reactants, conversion, degree of conversion, yield etc.

Ideal gas laws, equation of state, Vapor pressure, Clausius-Clapeyron equation, humidity-relative saturation & percentage saturation, concept of wet & dry bulbs thermometer, use of humidity Chart.

Module-2

Material balances & unit operation-drying, crystallization dissolution, combustion.

Solving material balance with Chemical reaction, recycle, bypass & purge Calculations.

Module-3

Energy balance concepts & units, Heat capacity, Calculation of enthalpy changes without change of phase, Energy balance with Chemical reaction, Standard heat of reaction at constant, pressure & constant volume, effect of temperature, on heat of reaction, Adiabatic reaction of temperature, heat of solution & mixing.

Text books

- (1) Chemical process principles-Hoejen, Watson, John Wiley & Asia pub.
- (2) Stoichiometry-Bhatt BI & SM Vora
- (3) Stoichiometry & process Calculations by-K.V. Narayanan & B-lakshmikatty