



Short Course Syllabus

Sections include short cut methods, rules of thumb, lab measurement methods, relevant websites, lab testing equipment, and valuable textbook references.

1. Introduction
2. Fundamental concepts
 - a. Viscosity
 - b. Agitator characteristics and power analysis
 - c. Scale-up strategies
3. Single liquid phase processes
 - a. Scale-up of fast reaction
 - b. Macro-mixing
 - c. Micro-mixing
 - d. Meso-micro mixing
 - e. Prandtl Mixing Length Theory
 - f. Turbulent Diffusion Analysis
 - g. Feed tube design
 - h. Example: Polymerization
 - i. Instantaneous Rxn Zone Model
4. Multiphase mixing
 - a. Liquid-liquid
 - b. Solid-liquid
 - c. Gas-liquid
 - d. Static Mixers
5. Heat transfer
 - a. Fundamentals
 - b. Thermal safety analysis
 - c. Reaction calorimetry
6. Kinetics
 - a. Theory and measurement
 - b. Catalyst considerations
7. Simple modeling techniques
 - a. Two-zone model
 - b. Plug Flow Recycle Reactor Mixing Model
8. Mixing and crystallization

