CME 550 Fall 2005

**Review for Exam 2**

Reading: Levenspiel Chapters 4-7. You can use two 8.5” x 11” sheets of notes + calculator.

General mole balances for reactors and simplifying assumptions for flow and batch reactors

Conversion vs. concentration, number of moles and flowrates (flow & batch)

Ideal reactor design equations for a single reaction

- Batch reactor
- Mixed flow reactor
- Plug flow reactor (how does PFR compare to batch?)
- Startup of mixed flow reactor (non-steady state operation)

Choosing reactor type given rate data (vs. concentration or conversion) based on equations or graphical / numerical method

Design using multiple MFRs in series

- Series with same space-time in each
- Given different space-times, calculate conversion in each
- Given final conversion, choose best configuration of MFRs

Selecting MFRs and PFRs in series for different reactions

Recycle reactors

Design for autocatalytic reactors

Design for parallel reactions

Maximizing selectivity

- Concentration effects
- Temperature effects
- Catalyst effects

Choosing best type of reactor for batch and flow processing

Instantaneous yield vs. cumulative yield

Choosing reactor configuration for best cumulative yield