CHG 3127: Chemical Reaction Engineering
Winter 2011

Instructor: Xudong Cao, Ph.D.
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Class Hours:
Lectures: Tuesdays 11:30 -13:00 and Fridays 13:00 – 14:30
Office Hours: Wednesdays 11:00 pm to 2:00 pm
Class will meet at Colonel By Hall B202 for lectures
Tutorials: Thursdays at 14:30 in STE C0136

Teaching Assistant:
Sagedeh Shahabi:
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Office: D-217E
Office Hours: TBD

Required Textbook: *Elements of Chemical Reaction Engineering*, by H. Scott Fogler, 4th edition, 2006. (Prentice Hall)

Course Content

- Mole balances, stoichiometry, equilibrium
- Reaction rate, reactor design
- Batch, CSTR, PFR, Recycle, semi-batch reactors
- Steady state and unsteady state reactor analysis with and without pressure drop
- Multiple reactions
- Nonisothermal reactor analysis - Energy balances
- Multiple steady states
- Transient reactor analysis; approach to steady state
- Catalysis - synthesis of a rate equation (time permitting)
- Design/analysis of catalytic reactors (time permitting)
- Heterogeneous reactors; diffusion and mass transfer (time permitting)

Course Structure
Most class periods will be presentations of material and discussion of concepts, sample problems, and homework problems. Your final marks will be based on the absolute quality of the performance throughout this course.

Grading	Midterm	20% or 30%
	Assignments	20% or 30%
	Final Exam	50%

In addition, your attendance to the lectures will also be factored into your evaluation at your professor's discretion.

Student Responsibility

Students enrolled in this class have completed four to five out of eight semesters of their undergraduate education. In less than two years you are likely to be employed or pursuing a graduate degree. Thus you are expected to behave professionally and to treat both the instructor and fellow students with respect. I will do my best to treat you in a similar manner.

The major responsibility that you have for learning this material is **to read the book and do the homework**. If you do this, it will be very difficult for you to fail this class – the concepts in the test materials will most likely come from the text.

Homework Policy

Your homework is due on Tuesdays by 13:00, one week after it is assigned. Your previous homework will be graded and returned back to you at the same time.

Please turn in your homework on the day it is due. If it is late, you will lose 30% of the points for the first day and 100% of the points for the second day. Remember, TAs can not grade and return homework in a timely manner if it is not turned in on time.

Please write your homework solutions neatly and clearly on white papers. Please write out the problem statement for each problem. Note all of your assumptions and any references you might use. While you will be graded throughout the whole process of working out the problem and getting the answer, it would be very helpful for you to place your answer in a rectangular box. Your TA has all authority over homework grading. Please contact your TA if you have questions.

Feel free to work in small groups (no more than 3) on homework assignments. However, you must turn in the homework in your own writing and list the names of your collaborators. Homework solutions and test papers from previous years are not acceptable resources.