ChE 718
Advanced Mass Transfer
Spring 2011

Instructor: Dr. Rakesh Gupta
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Class: MW 3:00 – 4:40, Room 107 MRB

Textbook: Middleman, S., An Introduction to Mass and Heat Transfer, Wiley, New York, 1998.

Grading:

Exam I	45%
Exam II (before end of semester)	45%
Homework	10%

Policies:
Open-book exams
No make-up exams
Exam grading appeals in writing only on the day exam is returned
Homework submitted must be individual work

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Course Outline

The goal of this course is to take students beyond the basic material presented in the transport phenomena course. This necessarily involves a familiarity with partial differential equations. The standard techniques of solving partial differential equations will be introduced in the class. The following material will be covered, though not necessarily in the exact order listed below.

Review of differential mass balances
- Flux expressions
- Dilute versus concentrated solutions

Diffusion through solids
- Steady state and unsteady state
- Dimensional Analysis
- Curvilinear geometry
- Porous solids
- Moving boundary problems
- Measurement of the diffusion coefficient

Diffusion through liquids
- Influence of Convection
- Measurement of the diffusion coefficient
- Boundary layer theory
- Mass transfer with chemical reaction

Diffusion through gases
- Theory of diffusion
- Measurement of the diffusion coefficient
- Dispersion