ChE 326 - Mass Transfer

Code and Name: ChE 326 - Mass Transfer
Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:
- Transport Processes and Separation Process Principles, C.J. Geankoplis, 4th Edition, John Wiley & Sons Inc, 2009
Other References:
- Principles and Modern Application of Mass Transfer Operations, Jaime Benitez, 2nd ed., 2009.

- Chemical Engineering, Coulson & Richardson , Vol. 2, 5th ed., 2002.

- Separation Process Engineering, Philip C. Wankat, 2nd ed, 2007.

- Separation Process Principles, J.D. Seader, E.J. Henley, 3rd Ed, D.K. Roper, Wiley, 2010

Course Description:
Introduction to mass transfer and diffusion, molecular diffusion in gases and liquids, convective mass transfer coefficients, mass transfer between phases, membrane, absorption with and without chemical reactions, and principles of unsteady-state mass transfer.

Pre-requisites: CHE 321 Heat Transfer
Co-requisites: None

Course Learning Outcomes:
With relation to ABET Student Outcomes (SOs: 1-7)
1. Recognize the criteria by which an empirical equation to predict diffusion and mass transfer coefficient must be used to solve certain mass transfer problem (1)
2. Write the appropriate empirical equation to solve certain mass transfer problem (1)
3. Define the material balance for solving mass transfer problem and equipment design (1)
4. Estimate diffusion, mass transfer coefficient, and concentration (1)
5. Calculate flux for various mass transfer cases (1)
6. Calculate overall mass transfer coefficient (1)
7. Interpret set of given data and equilibrium data used in solving material balance problem and equipment design (6)
8. Design absorption column and convective drying (2)

Topics to be covered:
-   Principles of Mass Transfer and Diffusion
-   Unsteady State Mass Transfer & Convective Mass Transfer
-   Stage and Continuous Gas-Liquid Separation Processes
-   Absorption in Plate Tower
-   Absorption in Packed Tower
-   Convective Drying

Grading Policy:
The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.