University of Maryland Baltimore County
Department of Civil and Environmental Engineering

Environmental Chemistry (3 credit hours)

Course Overview: In this course chemical principals will be discussed in the context of aquatic systems such as rivers, oceans, wetlands and the subsurface environment. Equilibrium and kinetic concepts will be reinforced through the use of chemical equilibrium and kinetic models. Surface and colloid chemistry will also be discussed. The student at the end of the course will be able to understand the basic chemical phenomena that control the fate of pollutants in the environment.

Prerequisites: CHEM 101, CHEM 102 or equivalent
Lecture Day/Time/Room: TBA
Instructor: Brian E. Reed
Office: 278 TRC Building
Phone: 410 455 8649, email: reedb@umbc.edu
Office Hours: TBA

Required Text:
Water Chemistry, Snoeyink and Jenkins, Wiley, 1980
MINEQL, A Chemical Equilibrium Program for Personnel Computers, Schecher and McAvoy, Procter and Gamble Company, 1991.
Reference Texts:
Chemistry for Environmental Engineers, Sawyer and McCarty, McGraw –Hill
Aquatic Chemistry, Stumm and Morgan
Supplemental readings (library): journal articles, handouts, etc.

Grading Policy:
Semester Quizzes: 5 at 10 percent each (50%). Quizzes will be given bimonthly
Journal Reviews: 10%
Chemical Equilibrium Modeling Project: 10%
Homework: 10%
Final Comprehensive Exam: 20%

COURSE OUTLINE

Week No.	Topic
1	Introduction, Basic Chemical Fundamentals
2	Reaction Kinetics
3	Chemical Thermodynamics
4	Chemical Thermodynamics/Acid-Base Equilibrium
5	Acid-Base Equilibrium
6	Precipitation and Dissolution
7	Precipitation and Dissolution
8	Coordination Chemistry
9	Coordination Chemistry
10	Oxidation-Reduction Reactions
11	Oxidation-Reduction Reactions
12	Surface and Colloid Chemistry
13	Surface and Colloid Chemistry
14	Surface and Colloid Chemistry
15	Class Project Presentations