ESM 230: Fundamentals of Environmental Chemistry I
Fall 2015

Instructor: 
Office Hours: 
Contact info: 
Teaching Assistant: 


Course Description:
The course will cover basic concepts and principles of chemistry as they apply to environmental problems. This will include the nature of matter, atomic, molecular, ionic and radical structures, stoichiometry and equilibrium, nuclear, acid-base and redox reactions. In the second term of the course, we will apply this understanding to explore water chemistry, water pollution, atmospheric chemistry, soil chemistry, toxicological chemistry and industrial ecology. Examples will be used that illustrate the social and economic importance of environmental chemistry. Satisfactorily completing this course and ESM 231 fulfill the chemistry requirement for Environmental Studies majors. Environmental Science students must complete ESM 230, 231 and 315 to fulfill the chemistry requirement.

You must also be registered and attend the ESM 230 recitation session to complete this course.

Course Learning Objectives:
- Apply significant figure rules in all calculations providing the correct number of significant numbers and units
- Convert between different units using conversion factors and dimensional analysis
- Recognize basic chemical symbols for chemical elements and common ions
- Explain how atomic structure predicts reactivity and bonding
- Explain the principles underlying the organization of the periodic table
- Employ stoichiometry to solve chemical problems
- Explain how properties of matter, gas laws, thermodynamics, acid/base reactions, and oxidation/reduction reactions apply to environmental systems or problems.

Schedule: Will follow week by week with chapters in text. Chapters 1-9 align with weeks 1-9 of the term. Week 10 will be left open for catch-up if we fall behind during the term, or to review for the final.

There will be no class on:
November 10th 2015
November 25th 2015
Reading assignments correspond, more or less, to week numbers, i.e. week 3 – read chapter 3. You should read the chapter prior to class. This will make it much easier for you to follow the lecture material. We will attempt to cover one chapter per week. I will be announcing chapters to be covered and homework assignments in class.

Assignments:
8 weekly homework assignments @ 20 pts each 160 pts.
8 quizzes, unannounced, worth 10 pts each 60 pts. (drop 2)
Mid-term exam, October 30th 60 pts.
Cumulative Final exam, December 9th 1015-1205 100 pts.

Total for Course: 380 pts.

Late Assignments: Late assignments will be penalized 5%/day (assignments are due at the beginning of class). If you have an extended illness or other emergency, let us know and we will discuss other deadline arrangements. Please do not e-mail late assignments. There will not be any makeup quizzes.

Grading Scale:
A   94 – 100   B+ 87 – 89   C+ 77 – 79   D+ 67 – 69
A - 90 – 93   B  83 – 86   C  73 – 76   D  63 – 66
   B- 80 – 82   C- 70 – 72   D- 60 – 62

Statement on Academic Honesty: Plagiarism or academic dishonesty of any form will not be tolerated in this class and will result in a failing grade for the assignment. All disputed cases of academic dishonesty will be referred to the Office of Student Affairs for arbitration. For more information, please see the Academic Honesty Policy in Portland State University’s “Bulletin”.

Resources:
Mathematics for Chemistry
http://www.shodor.org/unchem/math/

Lots of online chemistry resources:
http://www.chem1.com/chemed/genchem.shtml#B1