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 and chemical reactions, 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. Students will also explore environmental chemistry concepts in a concurrent laboratory session (ESM 231L).

Course Schedule:
Students should come prepared to class having read the chapter and/or articles for the week. Chapter numbers refer to Manahan book. The following schedule is tentative and may change based on our progress. Any significant changes to the schedule will be announced in class and/or course D2L.

Week 1  Chemicals in the Environment; Chapter 20 Organic Chemistry
Week 2  Chapter 2: Fundamentals of Biochemistry and Toxicological Chemistry
Week 3  Mini-test #1, Properties of Water and Chapter 3
Week 4  Chapter 3
Week 5  Chapter 4
Week 6  Mini Test #2: Gas Laws and Chapter 6
Week 7  Chapter 6
Week 8  Chapter 7,
Week 9  Mini Test # 3, Chapter 10 Soil
Week 10 Chapter 10 Soil

Graded Work:
Weekly homework assignments 9 @ 20 pts each 180 pts. (32%)
Mini- Area tests (40 minutes) 3 @ 30 pts each 90 pts (16%)
Pre-lab Quizzes 7 @10 pts each 70 pts. (13%)
Lab reports 8 @ 15 pts each 120 pts. (21%)
Final Exam Monday March 14th 1015-1205 100 pts. (18%)
560 pts
Description of Graded Work:

**Weekly homework assignments 9 @ 20 pts each**
Weekly homework assignments will be due on Monday 5PM each via the dropbox in the course D2L site.

**Late Assignments**: Late assignments will be penalized **10%/day** (first day starts after due date/time). If you have a documented extended illness or other emergency, let us know and we will discuss other deadline arrangements.

**Mini-Area tests (40 minutes) 3 @ 30 pts each**
These tests will assess your understanding of the material covered over the major topic areas in the course: Toxicology, Water Chemistry, Atmospheric Chemistry and Soil Chemistry. Preparation for these open book and notes tests should include review of the relevant chapters, HW, lecture notes and the research articles.

**Pre-lab Quizzes 7 @ 10 pts each**
Students must prepare for lab sessions by reading and thinking through the lab instructions. Quizzes are designed to assess your preparation to conduct the assigned laboratory project with good understanding of the procedures and underlying science.

**Lab reports 8 @ 15 pts each**
Lab reports formats will vary with each lab and will be posted on D2L. Lab reports will be due one week from the completion of the lab.

**Late Assignments**: Late assignments will be penalized **10%/day** (assignments are due at the beginning of class). If you have a documented extended illness or other emergency, let us know and we will discuss other deadline arrangements.

**Final Exam Monday March 14th 1015-1205 100pts**
The final exam will include short answer, problems and multiple choice questions based on four research articles in the topic areas for the courses. The open book, notes and articles exam is designed to assess your ability to apply knowledge from the course in a real world context.
Laboratory Session (ESM 231L):
(starred Lab Session have pre-lab quizzes)
   Week 1: Laboratory Safety and Recognizing Chemical Hazards
   Week 2*: Molecular Models of Organic Compounds
   Week 3*: pH of Common Environmental Substances
   Week 4*: Determination of the Hardness of Natural and Treated Water
   Week 5*: Determination of Chloride in Seawater
   Week 6: Makeup session
   Week 7*: Nitrogen dioxide in air
   Week 8*: Soil pH
   Week 9: NO2 analysis
   Week 10*: Cation exchange capacity in soils

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”.