

CHEMICAL PRINCIPLES OF ENVIRONMENTAL SCIENCE 11:375:202
FALL 2009

MW 2:15 - 3:35 Cook/Douglass Lecture Hall 103

Professor: John Reinfelder, ENRS Building, Rm 260; phone: 932-9800 x6211; reinfelder@envsci.rutgers.edu

Text: Environmental Chemistry, 4th Edition (Baird, 2008), available at the Cook-Douglass Student Coop

Pre-Requisite: General Chemistry 01:160:160 or 01:160:162

Syllabus

Sept	2	Introduction, Earth's oxidizing atmosphere
(Tues)	8	Atmospheric chemistry and gas concentration units (pp. 28-29; 36-40; 92-95)
	9	Stratospheric ozone chemistry and chemical kinetics (Chapter 1)
	14	Ozone depletion and heterogeneous reactions (Chapter 2)
	16	<u>Group Exercise 1:</u> Gas concentrations and steady-state kinetics
	21	Tropospheric chemistry (pp. 175-185)
	23	Photochemical smog (pp. 91-118; 185-192)
	28	<u>Group Exercise 2:</u> Smog reactions
	30	Isoprene oxidation and aerosol formation (Brown et al., 2009; pp. 132-140)
Oct	5	<u>Exam 1</u>
	7	Cloud water chemistry and the pH of rain
	12	Sulfur oxidation and acid rain (pp. 124-132; 147-155; 192-194)
	14	Chemical composition of natural waters 1: dissolved constituents (pp. 557-559; 589-592)
	19	Carbonate chemistry, alkalinity and the pH of natural waters (pp. 578-589; pp. 592-595)
	21	Carbonate chemistry, alkalinity and the pH of natural waters (cont'd)
	26	<u>Group Exercise 3:</u> Carbonate chemistry and weak acids
	28	Chemical composition of natural waters 2: suspended particles (pp. 735-746)
Nov	2	Review
	4	<u>Exam 2</u>
	9	Chemical composition of natural waters 3: redox chemistry (pp. 559-578)
	11	Chemical composition of natural waters 3 (cont'd)
	17	<u>Group Exercise 4:</u> Redox potential of natural waters
	18	Environmental (Science) Ethics - TMDL case study: http://www.onlineethics.org/CMS/enviro/EECS/TMDL.aspx
	23	Speciation and analysis of trace metals in surface waters (pp. 770-773)
	30	Organic contaminants in the environment (pp. 415-429; 441-461; 469-493; 507-534)
Dec	2	Organic contaminants in the environment (cont'd)
	7	Radionuclides in the environment (Chapter 9)
	9	<u>Group Exercise 5:</u> Group topics

Exam 3: Friday Dec 18, 1 pm.

Basis of Grade: Group exercises 30%; Homework: 30%; Exams, 40%

- Late homework will be **marked down 5%** for each class day after the due date it is received.
- No make-up exams unless you or someone in your immediate family is ill and this illness can be verified by a note from a dean.