CHEMISTRY DEPARTMENT, PORTLAND STATE UNIVERSITY

CHEMISTRY 223; GENERAL CHEMISTRY. SPRING, 2008

Venue: HOFFMAN HALL; 10:15 – 11:20 AM Instructor: R. H. Simoyi

Syllabus:

The chapters and page numbers referred to in this syllabus are from *'Chemistry: A Molecular Approach', by N. J. Tro*

The schedule is by no means rigid; it is fluxional, and may vary based on the class' progress.

Lecture No.	Date	Topic(s)	Pages
1	3/31	Acids and basses, common acids, the three definitions (of acids), K_a	662 – 671
2	4/02	Ionization constants, weak acids, water auto-ionization, pH scale	671 – 678
3	4/04	Calculation of $[H_3O^+]$ in weak acids, percent ionization	678 – 685
4	4/07	Acid mixtures, basic solutions, weak bases, conjugate bases and acids	686 – 693
5	4/09	Calculations, polyprotic acids, acid strength and molecular structure	693 – 703
6	**4/11**	Lewis acids and bases, Calculation exercises	703 – 711
7	4/14	Aqueous ionic equilibria, buffer solutions, pH of buffer	716 – 722
8	4/16	Henderson-Hasselbalch equation, calculations involving HHE	722 – 729
9	4/18	Buffer capacity, buffer range, titration and pH curves	729 – 738
10	4/21	More titration curves; weak acid/strong base and vice-versa	739 - 747
11	**4/23**	**Exam One**	

12	4/25	Solubility Product, common ion effect, precipitation	748 – 758
13	4/28	Qualitative analysis, complex ions, complex ion equilibria	758 – 764
14	4/30	Thermodynamics, entropy and the second law	774 – 783
15	5/02	Spontaneity, heat transfer and entropy, entropy changes, Gibbs	784 – 791
16	5/05	ΔG, ΔH, and ΔS and spontaneity; standard molar entropies	791 – 797
17	5/07	Calculating ΔG^0(rxn)	797 – 803
18	5/09	Le Chatelier's principle, free energy and equilibrium constant	803 – 811
19	5/12	Electrochemistry: balancing redox reactions	818 – 823
20	5/14	Galvanic cells, standard reduction potentials; SHE	823 – 829
21	5/16	Half-cell potentials, sketching electrochemical cells	829 – 835
22	**5/19**	**Exam Two**	
23	5/21	Cell potential and equilibrium constant.	835 – 845
24	5/23	Fuel Cells, electrolysis, corrosion	846 – 856
	5/26	Memorial Day, No university exercises	
25	5/28	Nuclear chemistry: radioactivity; decay particles	864 – 870
26	5/30	Electron capture, predicting type of radioactivity	870 – 879
27	6/02	Carbon dating, uranium/lead dating; fission	879 – 886
28	6/04	Nuclear reactor, $E = mc^2$,	886 – 894
29	6/06	Radioactivity in medicine and some 'fun' stuff; revision	894 – 898
30	**6/11**	**Final Exam, 10:15 – 12:05; Hoffman Hall**	