



PimaCommunityCollege
West Campus

CHM 152 General Chemistry II

Topic Outline

The current textbook for this course is Kotz, John C., Treichel, Paul M., and Townsend, John R., **Chemistry & Chemical Reactivity**, 7th Ed., Thomson-Brooks/Cole, 2009.

This Topic Outline is intended for students who are using the textbook by Brown, Theodore L., LeMay, H. Eugene, Jr., Bursten, Bruce E., **Chemistry: The Central Science**, 10th Ed., Pearson Education, 2006.

This outline is provided as a courtesy to students who may have the Brown and LeMay textbook and do not want to purchase a new textbook. Please note that all topics and problems will be similar to those in the Kotz and Treichel textbook, but there will be differences in topics and material presented in the course.

Lecture Topics	Reading Assignment	Problem Assignment
1. Solutions a) Intermolecular forces and solutions b) Types of solutions c) Nonelectrolytes vs electrolytes d) The solution process e) Heat and the solution process f) Temperature and solubility g) Concentration units: %, ppt, ppm, ppb h) M, m, X i) Colligative properties j) Freezing point depression k) Boiling point elevation l) Osmotic pressure m) Colloids	Chapter 13 pages 528-564	Chapter 13 pages 564-573 13.1-13.10, 13.11-13.85 (odd nos.) 13.88, 13.91, 13.95
2. Kinetics and Equilibrium a) Reaction rates b) Rate laws c) Order of a reaction d) Concentration and rate e) Reaction half-life f) Effects of temperature g) Collision theory h) Activation energy i) Reaction mechanisms j) Catalysis k) The dynamics of the equilibrium condition l) The Law of Mass Action m) The equilibrium constant n) What the equilibrium quotient tells us o) K_p vs K_c p) Equilibrium calculations q) Heterogeneous equilibria r) Le Châtelier's Principle	Chapter 14 pages 574-616 Chapter 15 pages 628-659	Chapter 14 pages 617-627 14.1-14.10, 14.13-14.175 (odd nos.), 14.84, 14.87, 14.91, 14.94 Chapter 15 pages 660-667 15.1-15.8, 15.9-15.55 (odd nos.)
3. Acids, Bases, and Ionic Equilibria a) Properties of acids and bases b) The Arrhenius theory c) The Brønsted Theory d) Conjugate acid-base systems e) K_w f) pH and pOH g) Strong and weak acids and bases h) Dissociation of weak acids and bases i) K_a and K_b j) Polyprotic acids k) Acid-base properties of salts l) The leveling effect m) The Lewis theory n) Buffers o) The common ion effect p) Acid-base titrations q) Indicators r) Precipitation reactions s) K_{sp} t) pH and solubility	Chapter 16 pages 668-712 Chapter 17 pages 720-760	Chapter 16 pages 712-719 16.1-16.10, 16.13-16.69 (odd nos.), 16.75-16.95 (odd nos.) 16,101, 16.103 Chapter 17 pages 760-767 17.1-17.8, 17.9-17.65 (odd nos.)

Lecture Topics	Reading Assignment	Problem Assignment
4. Thermodynamics a) Spontaneous changes b) Reversible processes c) The Second Law d) Entropy e) The Third Law f) Free energy g) Free energy and equilibrium	Chapter 19 pages 802-836	Chapter 19 pages 837-845 19.1-19.6, 19.7, 19.11, 19.15, 19.21, 19.25, 19.29, 19.31, 19.37-19.79 (odd nos.)
5. Electrochemistry a) Metallic and electrolytic conduction b) Half reactions and redox c) Electrochemical cells d) Voltaic cells e) Standard cell potentials f) Free energy and electrical work g) The Nernst equation h) Commercial cells and batteries i) Corrosion	Chapter 20 pages 846-890	Chapter 20 pages 890-899 20.1-20.7, 20.11-20.89 (odd nos.)
(If time permits)		
6. Nuclear Chemistry a) Radioactivity b) Radioactive decay c) Nuclear stability d) Kinetics of radioactive decay e) Radioisotope dating f) Nuclear transformations g) Extending the periodic table h) Effects of radiation i) Applications of radioisotopes j) Nuclear reactors k) Making a nuclear device	Chapter 21 pages 901-930	Chapter 21 pages 931-935 21.1-21.6, 21.7-21.47 (odd nos.), 21.53-21.59 (odd nos.)