Chemistry AP Unit 7 Outline: Reduction, Oxidation, and Electrochemistry

Chapter 19: Electrochemistry *(Unit Evaluation: Homework: 20%, Lab: 30%, Unit Test 50%)*

Classes	Topics	Suggested Reading	✓	Assignments	✓
1	Oxidation-Reduction Reactions (Redox Reactions), Half Reactions, Reducing Agent and Oxidizing Agent (LEO-RA and GER-OA), Oxidation States (Oxidation Numbers), Characteristics of Redox Reactions, Balancing Half Reactions in Acidic and Basic Environments, Balancing Redox Reactions	4.4: Oxidation-Reduction Reactions (pg. 131 to 142) 19.1 Redox Reactions (pg. 820 to 822)		pg. 158–159 #36 to 41, 43 to 56 pg. 855 #1 and 2	
2	Redox Titrations, Ion Colors, Relative Strengths of Reducing and Oxidizing Agents, Electrochemical Energy, Galvanic (Voltaic) Cells, Salt Bridge, Porous Disk, Porous Cup, Electrode, Cathode and Anode, (LEOA-RA and GERC-OA), Cell Potential, Volt (Potential Difference), Voltmeter (Potentiometer), Electron Flow, Anions & Cations Movement, Electric Potential (E_{cell}), Standard Reduction Potentials, Standard Hydrogen Electrode, Line Notation, Complete Description of Galvanic Cells, Charge (q), Coulomb (C), Faraday Constant (F = 96,500 C/mol)	4.8: Redox Titrations (pg. 153 to 155) 19.2: Galvanic Cells (pg. 823 to 825) 19.3: Standard Reduction Potentials (pg. 825 to 830)		pg. 160–161 #89 to 98 pg. 855–856 #3 to 6, 11 to 18	
3	Effects of Concentration on Cell Potential, Concentration Cells, Electrical Work ($w = -qE$), Free Energy and Electric Potential ($\Delta G° = -nFE°$), Predicting Spontaneity, Nernst Equation ($E_{cell} = E°_{cell} - \frac{RT}{nF} \ln Q$ or $E_{cell} = E°_{cell} - \frac{0.0592}{n} \log Q$ at 25°C), Ion-Selective Electrodes, Equilibrium Constant of Redox Reactions ($\log K = \frac{nE^{\circ}}{0.0592}$ at 25°C)	19.4: Spontaneity of Redox Reactions (pg. 831 to 834) 19.5: The Effects of Concentration on Cell Emf (pg. 834 to 838)		pg. 856 #19, 21 to 26 pg. 856 #27 to 34	
4	Battery, Batteries in Series, Lead Storage Battery, Dry-Cell Battery, Fuel Cells, Corrosion, Galvanizing, Cathodic Protection (Sacrificial Metal)	19.6: Batteries (pg. 839 to 844) 19.7: Corrosion (pg. 851 to 855)		pg. 856–857 #35, 36, 38 pg. 857 #39 to 42	
5	Electrolysis, Electrolytic Cell, Current ($I = \frac{q}{t}$), Ampere, Electroplating ($n_{e^-} = \frac{It}{F}$), Electrolysis of Water, Electrolysis of Mixtures of Ions, Relative Oxidizing Ability, Aluminum Production, Electrorefining of Metals, Metal Plating, Electrolysis of NaCl, Downs Cell, Mercury Cell	19.8: Electrolysis (pg. 848 to 854)		pg. 856–858 #37, 43 to 60	
6	**Lab #8: Electrochemical Cells (April 13, Wednesday)**			***Lab #8 Due: (May 9, Monday)***	
7	**Unit 7 Test (Chapter 19 with 4.4 & 4.8) (April 26, Tuesday)**	***Chapter 19 & 4.4 & 4.8 HW Due: April 26, Tuesday***			
	AP Chemistry Take-Home Exam (Assign on April 13, Wednesday)			***Take-Home Final Due: (April 25, Monday)***	
2 classes	***AP Exam Review***				
	AP CHEMISTRY EXAM (MONDAY, MAY 2 - Noon)				