

AP Chemistry (*Distant Learning*) Unit 7 Outline: Reduction, Oxidation and Electrochemistry

*Green Fonts - *Synchronous*

*Blue Fonts - **Asynchronous Concepts (Students to watch Video Lessons on their own.)*

Chapter 19: Electrochemistry (Unit Evaluation: Homework: 25%, Lab: 35%, Unit Test 50%)

Wk/Class	Topics	Suggested Reading	✓	Assignments	✓
April 12 / Day 1	Oxidation-Reduction Reactions (Redox Reactions), Half Reactions, Reducing Agent and Oxidizing Agent (LEO-RA and GER-OA), Oxidation States (Oxidation Numbers)	4.4: Oxidation-Reduction Reactions (pg. 131 to 142)		pg. 158–159 #36 to 41, 43 to 56	
April 12 / Day 2	Characteristics of Redox Reactions, Balancing Half Reactions in Acidic and Basic Environments, Balancing Redox Reactions, Redox Titrations, Ion Colors	19.1 Redox Reactions (pg. 820 to 822) 4.8: Redox Titrations (pg. 153 to 155)		pg. 855 #1 and 2 pg. 160–161 #89 to 98	
April 26 / Day 1	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 and Cations Movement, Electric Potential (E_{cell}), Standard Reduction Potentials, Standard Hydrogen Electrode, Line Notation, Complete Description of Galvanic Cells,	19.2: Galvanic Cells (pg. 823 to 825) 19.3: Standard Reduction Potentials (pg. 825 to 830)		pg. 855–856 #3 to 6, 11 to 18	
April 26 / Day 2	Charge (q), Coulomb (C), Faraday Constant ($F = 96,500 \text{ C/mol}$), Electrical Work ($w = -qE$), Free Energy and Electric Potential ($\Delta G^\circ = -nFE^\circ$), Predicting Spontaneity, Effects of Concentration on Cell Potential, Concentration Cells, Nernst Equation ($E_{\text{cell}} = E^\circ_{\text{cell}} - \frac{RT}{nF} \ln Q$ or $E_{\text{cell}} = E^\circ_{\text{cell}} - \frac{0.0592}{n} \log Q$ at 25°C), Ion-Selective Electrodes, Equilibrium Constant of Redox Reactions (At 25°C, $\log K = \frac{nE^\circ}{0.0592}$)	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	
May 3 / Day 1	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	
May 3 / Day 2	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	
May 10 / Day 1	Lab #8: Electrochemical Cells (April 29, Thursday)	Lab #8 Handout Lab #8 Video		Lab #8 Due: (May 27, Thursday)	
May 10 / Day 2	Unit 7 Test (covers Sections 4.4 & 4.8 and Chapter 19) (May 13, Thursday)	Sections 4.4 & 4.8 & Ch 19 HW Due (May 13, Thursday)			
	AP CHEMISTRY EXAM (IN-SCHOOL) (Admin Period 2: TUES, MAY 25)				