CHEMISTRY 1220

SPRING 2013 CHECKLIST: MW CLASS

LECTURE #1: MONDAY, JANUARY 7th

Syllabus overview, course expectations, Mastering Chemistry registration, Polleverywhere registration, www.drfus.com

Before Lecture #2 you must:

- ☐ Register for Mastering Chemistry (Course ID: MWCHEM1220SP13)
- ☐ Register for Polleverywhere

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #2:

- ☐ Section 13.1 Properties of Solutions (3:55)
- ☐ Section 13.1 The Solution Process (8:15)
- ☐ Section 13.2 Saturated Solutions and Solubility (6:56)
- ☐ Section 13.3 Factors Affecting Solubility (7:21)
- ☐ Section 13.3 Miscibility (5:29)
- ☐ Section 13.3 Pressure Effects on Gas Solubility (4:18)
- ☐ Section 13.3 Pressure Effects on Gas Solubility Example Problem (3:31)
- ☐ Section 13.4 Expressing Solution Concentration (6:47)
- ☐ Section 13.4 Solution Concentration Example Problem (5:31)

Mastering Chemistry Pre-Lecture #2 Assignment (due 6:30 pm Wed., Jan. 9th):

- ☐ Interactive Activity – Energetics of Solution Formation
- ☐ Interactive Activity – Henry's Law
- ☐ Solubility

LECTURE #2: WEDNESDAY, JANUARY 9th

Polleverywhere Lecture Questions

- ☐ Dissolution of NaCl in Water (Go Figure 13.4)
- ☐ Energetics of Solution Formation (GIST 13.4)
- ☐ Henry's Law (13.38)
- ☐ Solubility of Gases and Intermolecular Forces (13.33 – Copy)
- ☐ Units of Concentration (13.49)
- ☐ Units of Concentration (13.53)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #3:

- ☐ Section 13.5 Colligative Properties (7:50)
- ☐ Section 13.5 Colligative Properties Example Problem #1 (4:49)
- ☐ Section 13.5 Colligative Properties Example Problem #2 (3:29)
- ☐ Section 14.1 Factors That Affect Reaction Rates (3:04)
- ☐ Section 14.2 Reaction Rates (4:52)
- ☐ Section 14.2 Reaction Rates Example Problem (10:15)

Mastering Chemistry Pre-Lecture #3 Assignment (due 6:30 pm Mon., Jan. 14th):

- ☐ Boiling Point Elevation and Freezing Point Depression for Solutions in Water
- ☐ Animation – Osmosis and Osmotic Pressure
- ☐ Molar Mass from Colligative Properties
- ☐ Reaction Rates

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #1
DUE SUNDAY, JANUARY 13th at 11:59 PM

LECTURE #3: MONDAY, JANUARY 14th

Polleverywhere Lecture Questions

- ☐ Vapor Pressure Lowering (13.68)
- ☐ Freezing Point Depression (13.75)
- ☐ Molar Mass from Osmotic Pressure (13.82)
- ☐ Factors that Affect Reaction Rates (GIST 14.1)
- ☐ Reaction Rates and Stoichiometry (14.25)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #4:

- ☐ Section 14.3 Concentration and the Rate Law (5:28)
- ☐ Section 14.3 Concentration and the Rate Law Example Problem #1 (7:50)
- ☐ Section 14.3 Concentration and the Rate Law Example Problem #2 (7:50)
- ☐ Section 14.4 1st Order Integrated Rate Law (8:18)
- ☐ Section 14.4 Half Life for 1st order Reactions (2:48)
- ☐ Section 14.4 1st Order Half Life Example Problem (4:19)
- ☐ Section 14.4 2nd Order Integrated Rate Law Expression (3:21)

Mastering Chemistry Pre-Lecture #4 Assignment (due 6:30 pm Wed., Jan. 16th):

- ☐ Interactive Activity – The Rate Law
- ☐ Interactive Activity – The Kinetics of a Second Order Reaction

LECTURE #4: WEDNESDAY, JANUARY 16th

Polleverywhere Lecture Questions

- ☐ Rate Laws (14.35)
- ☐ Using Spectroscopic Methods to Measure Rates (14.107)
- ☐ Change in Concentration with Time (14.45)
- ☐ Determining Rate Laws with Experimental Data (14.47)
- ☐ Integrated Rate Law Expressions (14.51)
- ☐ Half Life (14.46)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #5:

- ☐ Section 14.5 Temperature and Rate (2:13)
- ☐ Section 14.5 The Collision Model (4:37)
- ☐ Section 14.5 The Orientation Factor (4:27)
- ☐ Section 14.5 Transition State Theory (9:55)
- ☐ Section 14.5 The Arrhenius Equation (5:53)

- ☐ Section 14.5 The Arrhenius Equation Example Problem (5:01)
- ☐ Section 14.6 Reaction Mechanisms (2:53)
- ☐ Section 14.6 Proposing a Reaction Mechanism (5:48)
- ☐ Section 14.6 Proposing a Mechanism Example Problem #1 (2:32)
- ☐ Section 14.6 Proposing a Mechanism Example Problem #2A (5:41)
- ☐ Section 14.6 Proposing a Mechanism Example Problem #2B (6:57)
- ☐ Section 14.7 Catalysis (2:41)

Mastering Chemistry Pre-Lecture #5 Assignment (due 6:30 pm Wed., Jan. 23rd):

- ☐ Reaction Rates and Temperature
- ☐ Theoretical Models for Chemical Kinetics and Reaction Profiles
- ☐ Mechanisms and Molecularity

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #2
DUE SUNDAY, JANUARY 20th at 11:59 PM

LECTURE #5: WEDNESDAY, JANUARY 23rd

Polleverywhere Lecture Questions

- ☐ How Temperature Influences Rate (14.56)
- ☐ Factors Influencing Rate (14.59 – Copy)
- ☐ Determining Activation Energy (14.67)
- ☐ Proposing a Reaction Mechanism (14.77)
- ☐ Proposing a Reaction Mechanism (14.78)
- ☐ Catalysis (14.95)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #6:

- ☐ Section 15.1 Chemical Equilibrium (3:08)
- ☐ Section 15.2 The Equilibrium Constant (5:44)
- ☐ Section 15.2 Equilibrium Expressions Involving Gases (7:49)
- ☐ Section 15.3 Magnitude of Equilibrium Constants (5:50)
- ☐ Section 15.3 Combining Equilibrium Constants (6:46)
- ☐ Section 15.4 Heterogeneous Reactions (4:42)

Mastering Chemistry Pre-Lecture #6 Assignment (due 6:30 pm Mon., Jan. 28th):

- ☐ Visual Representation of Equilibrium
- ☐ Linking Equilibrium and Kinetics

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #3
DUE SUNDAY, JANUARY 27th at 11:59 PM

LECTURE #6: MONDAY, JANUARY 28th

Polleverywhere Lecture Questions

- ☐ The Concept of Equilibrium (15.13)
- ☐ Equilibrium Constants (15.23)
- ☐ Determining Equilibrium Constants from Experimental Data (15.26)
- ☐ Combining Equilibrium Constants (15.27)
- ☐ Heterogeneous Reactions (15.28)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #7:

- ☐ Section 15.6 The Reaction Quotient Q (6:44)
- ☐ Section 15.6 Calculating Equilibrium Concentration Example Problem #1 (9:44)
- ☐ Section 15.6 Calculating Equilibrium Concentration Example Problem #2 (5:45)
- ☐ Section 15.7 Le Chatlier's Principle (2:46)
- ☐ Section 15.7 The Effect of Changing Concentration (4:57)
- ☐ Section 15.7 The Effect of Pressure Changes (4:20)
- ☐ Section 15.7 The Effect of an Inert Gas, Temperature, and Catalysis (5:17)

Mastering Chemistry Pre-Lecture #7 Assignment (due 6:30 pm Wed., Jan. 30th):

- ☐ Fundamentals of Equilibrium Concentration Calculations
- ☐ Applying Le Chatelier's Principle

LECTURE #7: WEDNESDAY, JANUARY 30th

Polleverywhere Lecture Questions

- ☐ Calculating Equilibrium Concentrations (15.52)
- ☐ Calculating Equilibrium Concentrations (15.55)
- ☐ LeChatlier's Principle (15.61)
- ☐ LeChatlier's Principle (15.66)
- ☐ Disturbing Equilibrium (15.62)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #8:

- ☐ Section 16.1 Acid-Base Equilibria (4:09)
- ☐ Section 16.2 Bronsted-Lowry Acids and Bases (6:22)
- ☐ Section 16.2 Conjugate Acid-Base Pairs (5:37)
- ☐ Section 16.2 Relative Strengths of Acids and Bases (7:23)
- ☐ Section 16.2 Relative Strengths of Acids and Bases Example Problem (3:12)
- ☐ Section 16.3 The Autoionization of Water (5:25)
- ☐ Section 16.4 The pH Scale (4:41)
- ☐ Section 16.5 pH of Strong Acids (5:23)

Mastering Chemistry Pre-Lecture #8 Assignment (due 6:30 pm Mon., Feb. 4th)

- ☐ Conjugate Pairs
- ☐ Acid-Base Relationships in Water
- ☐ pH and Kinetics

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #4
DUE SUNDAY, FEBRUARY 3rd at 11:59 PM

LECTURE #8: MONDAY, FEBRUARY 4th

Polleverywhere Lecture Questions

- ☐ Conjugate Acid-Base Pairs (16.16)
- ☐ Relative Strengths of Acids and Bases (16.23)
- ☐ Autoionization of Water (16.29)

- ☐ pH Scale (16.38)
- ☐ pH of Strong Acids (16.43)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #9:

- ☐ Section 16.6 pH of Weak Acids Example Problem #1 (4:48)
- ☐ Section 16.6 pH of Weak Acids Example Problem #2 (9:34)
- ☐ Section 16.6 Polyprotic Acids (5:58)
- ☐ Section 16.6 Percent Ionization (4:58)
- ☐ Section 16.7 Weak Bases (4:33)
- ☐ Section 16.8 Relationship Between K_a and K_b (4:30)

Mastering Chemistry Pre-Lecture #9 Assignment (due 6:30 pm Wed., Feb. 6th):

- ☐ PhET Simulation – Acid-Base Solutions
- ☐ Weak Polyprotic Acids
- ☐ Percent Ionization

LECTURE #9: WEDNESDAY, FEBRUARY 6th

Polleverywhere Lecture Questions

- ☐ K_a and pK_a (16.49)
- ☐ pH of weak acids/weak bases (16.59)
- ☐ Percent Ionization (16.63)
- ☐ Calculating the pH of a Polyprotic Acid Solution (16.67 – Copy)
- ☐ Relationship Between K_a and K_b (GIST 16.11)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #10:

- ☐ Section 16.9 Acid-Base Properties of Salt Solutions Part 1 (5:02)
- ☐ Section 16.9 Acid-Base Properties of Salt Solutions Part 2 (5:22)
- ☐ Section 16.10 Acid-Base Behavior and Chemical Structure (4:36)
- ☐ Section 16.10 Oxyacids (5:53)
- ☐ Section 16.10 Carboxylic Acids (4:37)
- ☐ Section 16.11 Lewis Acids and Bases (3:12)

Mastering Chemistry Pre-Lecture #10 Assignment (due 6:30 pm Mon. Feb. 11th)

- ☐ Acid-Base Properties of Salt Solutions
- ☐ Relative Strengths of Oxyacids, Carboxylic Acids, and Amines
- ☐ Lewis Acids and Bases

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #5
DUE SUNDAY, FEBRUARY 10th at 11:59 PM

LECTURE #10: MONDAY, FEBRUARY 11th

Polleverywhere Lecture Questions

- ☐ Strength of Salt Solutions (16.78)
- ☐ pH of Salt Solutions (16.81)
- ☐ Factors the Affect Acid Strength (16.92)
- ☐ Carboxylic Acids (16.87)
- ☐ Lewis Acids and Bases (16.97)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #11:

- ☐ Review For Exam #1: Thursday, February 14th 8:00 – 9:45 pm

Mastering Chemistry Pre-Lecture #11 Assignment (due 8:00am Thurs, Feb 14):

- ☐ Practice Midterm Exams

LECTURE #12: WEDNESDAY, FEBRUARY 13th

MIDTERM EXAM #1 REVIEW SESSION
CHAPTERS 13, 14, 15, and 16.1-16.5

EXAM #1: THURSDAY, FEBRUARY 14th 8:00 – 9:45 PM

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #13:

- ☐ Section 17.1 The Common Ion Effect (5:44)
- ☐ Section 17.2 Buffer Solutions (3:42)
- ☐ Section 17.2 How Buffers Work (5:35)
- ☐ Section 17.2 Calculating pH of Buffer Solutions (5:51)
- ☐ Section 17.2 Buffer Example Problem (10:50)
- ☐ Section 17.2 Choosing the Proper Buffer Solution (7:56)
- ☐ Section 17.2 Buffer Example Problem #2 (4:21)
- ☐ Section 17.3 Acid-Base Titrations (11:54)
- ☐ Section 17.3 Weak Acid-Strong Base Titration pH Before Base Added (2:38)
- ☐ Section 17.3 Weak Acid-Strong Base Titration pH After Base is Added (3:51)
- ☐ Section 17.3 Weak Acid-Strong Base Titration pH After More Base is Added (2:41)
- ☐ Section 17.3 Weak Acid-Strong Base Titration pH at Endpoint (6:04)
- ☐ Section 17.3 Weak Acid-Strong Base Titration pH Beyond Endpoint (3:53)
- ☐ Section 17.3 Weak Acid-Strong Base Titration Curve (4:53)

Mastering Chemistry Pre-Lecture #13 Assignment (due 6:30 pm Mon., Feb. 18):

- ☐ Base/Acid Ratios in Buffers
- ☐ Titrations

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #6
DUE SUNDAY, FEBRUARY 17th at 11:59 PM

LECTURE #13: MONDAY, FEBRUARY 18th

Polleverywhere Lecture Questions

- ☐ Common Ion Effect (17.15)
- ☐ Buffered Solutions (17.23)
- ☐ Buffered Solutions (17.26)
- ☐ Acid-Base Titrations (17.41)
- ☐ Acid-Base Titrations (17.46)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #14:

- ☐ Section 17.4 Overview of Solubility (6:07)
- ☐ Section 17.4 The Solubility Product Constant (8:45)

- ☐ Section 17.4 K_{sp} Example Problem (7:47)
- ☐ Section 17.4 Ranking the Solubility of Slightly Soluble Salts given the K_{sp} Part I (9:14)
- ☐ Section 17.4 Ranking the Solubility of Slightly Soluble Salts given the K_{sp} Part II (12:47)
- ☐ Section 17.6 Criteria for Precipitation (11:49)
- ☐ Section 17.6 If Two Solutions are Mixed Will a Precipitate Form? (7:30)
- ☐ Section 17.6 Order of Precipitation, Minimum Concentration Needed to Facilitate Precipitation, and Best Separation (14:56)

Mastering Chemistry Pre-Lecture #14 Assignment (due 6:30 pm Wed., Feb. 20):

- ☐ Introduction to Solubility and the Solubility Product Constant
- ☐ Solubility Constant Expression
- ☐ Fractional Precipitation of Metal Carbonates

LECTURE #14: WEDNESDAY, FEBRUARY 20th

Polleverywhere Lecture Questions

- ☐ Determining K_{sp} Using Experimental Data (17.113)
- ☐ Stoichiometry of the K_{sp} Lab (17.103)
- ☐ Relating K_{sp} to Molar Solubility (17.51)
- ☐ Selective Precipitation (17.71)
- ☐ Best Separation (17.72)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #15:

- ☐ Section 17.5 Common Ion Effect (11:32)
- ☐ Section 17.5 pH Effects (4:26)
- ☐ Section 17.5 How does adding acid/base influence solubility? (11:01)
- ☐ Section 17.5 Does Zinc Hydroxide follow the rules we've discussed so far? (4:27)
- ☐ Section 17.5 Complex Ion Formation and Coordination Complexes (7:33)
- ☐ Section 17.5 Re-analyzing Zinc Hydroxide (5:53)
- ☐ Section 17.5 Solubility of Zinc Hydroxide in 15 M NH_3 (11:55)
- ☐ Section 17.5 Determining the Concentration of Free Metal Cations in Solution (13:25)
- ☐ Section 17.5 Amphoterism (6:11)
- ☐ Section 17.5 Solubility of $Al(OH)_3$ in 15 M NH_3 (13:56)
- ☐ Section 17.5 Molar Solubility of $Al(OH)_3$ in 15 M NH_3 continued (10:28)
- ☐ Section 17.5 Amphoteric Effects on Solubility (4:10)

Mastering Chemistry Pre-Lecture #15 Assignment (due 6:30 pm Mon., Feb. 25):

- ☐ The Effect of Acid on Solubility
- ☐ Acid Rain: Effect on Solubility of Calcium Carbonate
- ☐ Solubility of Zinc Hydroxide in Basic Solution

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #7
DUE SUNDAY, FEBRUARY 24th at 11:59 PM

LECTURE #15: MONDAY, FEBRUARY 25th

Polleverywhere Lecture Questions

- ☐ Common Ion (17.56)
- ☐ pH Effects (17.59)
- ☐ Complex Ion Formation (17.64)
- ☐ Free Ion Concentration (17.63)
- ☐ Amphoteric Effects (17.99)
- ☐ Factors Influencing Solubility (17.106)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #16:

- ☐ Section 19.1 Thermodynamics (11:13)
- ☐ Section 19.2 Spontaneous Process and Entropy (10:58)
- ☐ Section 19.2 Mathematical Definition of Entropy (9:10)
- ☐ Section 19.3 Macro and Micro States (13:04)
- ☐ Section 19.3 Comparing Entropy of Various Systems (6:39)
- ☐ Section 19.3 2nd Law of Thermodynamics (11:43)
- ☐ Section 19.3 3rd Law of Thermodynamics (9:58)

Mastering Chemistry Pre-Lecture #16 Assignment (due 6:30 pm Wed., Feb. 27):

- ☐ Qualitative Predictions About Entropy
- ☐ The Boltzmann Equation
- ☐ Entropy and the Second Law of Thermodynamics

LECTURE #16: WEDNESDAY, FEBRUARY 27th

Polleverywhere Lecture Questions

- ☐ Enthalpy and Entropy (19.1)
- ☐ Entropy and Microstates (19.33)
- ☐ Spontaneous Reactions (19.11)
- ☐ Signs of Enthalpy and Entropy (19.3 – Copy)
- ☐ Comparing Entropy (19.48)
- ☐ Spontaneous Reactions and Temperature (19.66)
- ☐ Entropy of the Solution Process

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #17:

- ☐ Section 19.5 Free Energy
- ☐ Section 19.5 Predicting the Sign of Delta G (5:06)
- ☐ Section 19.6 Free Energy Under Non-standard Conditions (14:40)
- ☐ Section 19.6 Thermochemistry of the Haber Process (14:34)

Mastering Chemistry Pre-Lecture #17 Assignment (due 6:30 pm Mon., Mar. 4):

- ☐ Interactive Activity – Temperature Dependence of Entropy
- ☐ Gibbs Free Energy: Temperature Dependence
- ☐ Free Energy and the Reaction Quotient
- ☐ Gibbs Free Energy and Equilibrium

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #8
DUE SUNDAY, MARCH 3rd at 11:59 PM

LECTURE #17: MONDAY, MARCH 4th

Polleverywhere Lecture Questions

- ☐ Gibbs Free Energy (19.83)
- ☐ Gibbs Free Energy and Equilibrium (19.85)
- ☐ How Thermochemistry Relates to Solubility (19.112 – Copy)
- ☐ Thermochemistry Lab Data

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #18:

- ☐ Review For Exam #2: Thursday, March 7th 8:00 – 9:45 pm

Mastering Chemistry Pre-Lecture #12 Assignment (due 6:30 pm Wed., Mar. 6):

- ☐ Practice Midterm Exam

LECTURE #18: WEDNESDAY, MARCH 6th

MIDTERM EXAM #2 REVIEW SESSION
CHAPTERS 16.6 – 16.11, 17, and 19.1 – 19.4

EXAM #2: THURSDAY, MARCH 7th 8:00 – 9:45 PM

SPRING BREAK

LECTURE #19: MONDAY, MARCH 18th

INTRODUCTION TO RESEARCH
INVESTIGATION OF THE RETENTION CAPACITY OF SOILS FOR METALS

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #20:

- ☐ Section 20.1 Electrochemistry Observations (11:22)
- ☐ Section 20.1 Electrochemistry (11:44)
- ☐ Section 20.3/20.4 Silver-Copper Voltaic Cell Part 1 (7:15)
- ☐ Section 20.3/20.4 Silver-Copper Voltaic Cell Part 2 (10:23)
- ☐ Section 20.3/20.4 Silver-Iron Voltaic Cell (6:22)
- ☐ Section 20.3/20.4 Voltaic Cells (11:20)

Mastering Chemistry Pre-Lecture #20 Assignment (due 6:30 pm Wed., Mar. 20):

- ☐ Animation – Analysis of a Copper-Zinc Voltaic Cell
- ☐ A Nickel-Aluminum Galvanic Cell

LECTURE #20: WEDNESDAY, MARCH 20th

Polleverywhere Lecture Questions

- ☐ Redox Reactions (20.3 Copy)
- ☐ Redox Reactions (20.15)
- ☐ Voltaic Cells (20.27)
- ☐ Voltaic Cell Stoichiometry (20.37)
- ☐ Voltaic Cell Demo

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #21:

- ☐ Section 20.2 Balancing Redox Reactions (14:43)
- ☐ Section 20.5 E_{cell} and Delta G Part 1 (10:28)
- ☐ Section 20.5 E_{cell} and Delta G Part 2 (5:24)
- ☐ Section 20.6 Cell Potential and Concentration (8:33)
- ☐ Section 20.6 Application of the Nernst Equation (7:51)

Mastering Chemistry Pre-Lecture #21 Assignment (due 6:30 pm Mon., Mar. 25):

- ☐ Balancing Redox Reactions and Stoichiometry
- ☐ Interactive Activity – The Relationship Among E_{cell}, K_{eq}, and Gibbs Free Energy
- ☐ The Nernst Equation and pH

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #9
DUE SUNDAY, MARCH 24th at 11:59 PM

LECTURE #21: MONDAY, MARCH 25th

Polleverywhere Lecture Questions

- ☐ Balancing Redox Reactions (20.23)
- ☐ Balancing Redox Reactions (20.24)
- ☐ E_{cell} and $\triangle G$ (20.52)
- ☐ Non-standard Cell Potentials (20.68)
- ☐ Magnitude of Cell Potential (20.69)
- ☐ Nernst Equation (20.71)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #22:

- ☐ Section 20.9 Electrolysis (2:53)
- ☐ Section 20.9 Stoichiometry of Electrolytic Processes (4:51)
- ☐ Section 20.9 Electrolysis Example (3:34)
- ☐ Section 20.9 Electrolysis of H_2O (8:39)
- ☐ Section 20.9 Calculating Concentration in Electrolysis (5:35)

Mastering Chemistry Pre-Lecture #22 Assignment (due 6:30 pm Wed., Mar. 27):

- ☐ Simulation – Electrolysis

LECTURE #22: WEDNESDAY, MARCH 27th

Polleverywhere Lecture Questions

- ☐ Electroplating (20.91)
- ☐ Electrolysis and Concentration (20.92)
- ☐ Cell Potential and pH (20.68)
- ☐ Calculating Cell Potential (20.71)
- ☐ Interpreting Electrochemical Lab Data

Laboratory Manual Sections to Read Before Lecture #23:

- ☐ Research Project

Mastering Chemistry Pre-Lecture #23 Assignment:

- ☐ none

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #10
DUE SUNDAY, MARCH 31st at 11:59 PM

LECTURE #23: MONDAY, APRIL 1st

ANALYZING RESEARCH DATA
INVESTIGATION OF THE RETENTION CAPACITY OF SOILS FOR METALS

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #24:

- ☐ Section 23.1 Transition Metals and Coordination Complexes (4:35)
- ☐ Section 23.1 The Electromagnetic Spectrum and Color (6:06)
- ☐ Section 23.1 Orbital Energies (9:07)
- ☐ Section 23.1 UV-Vis Spectroscopy (7:11)
- ☐ Section 23.1 UV-Vis Spectroscopy Part 2 (9:29)
- ☐ Section 23.1 Electron Configuration of Transition Metal Complexes (9:05)
- ☐ Section 23.2 Chemistry of Coordination Complexes (9:24)
- ☐ Section 23.2 Coordination Complexes Before 1893 (7:37)
- ☐ Section 23.2 Modern Day Formulas for Transition Metal Complexes (8:24)
- ☐ Section 23.4 Arranging Ligands Around the Transition Metal Center: Introducing Isomers (15:01)
- ☐ Section 23.4 Isomer Overview (3:53)
- ☐ Section 23.4 Linkage Isomers (6:07)
- ☐ Section 23.4 Coordination Sphere Isomers (3:49)
- ☐ Section 23.4 Geometric Isomers (8:18)
- ☐ Section 23.4 Optical Isomers/Enantiomers (13:50)

Mastering Chemistry Pre-Lecture #24 Assignment (due 6:30 pm Wed., Apr. 3):

- ☐ Electron Configuration and Oxidation Numbers
- ☐ Coordination Complexes
- ☐ Visualizing Complexes
- ☐ Isomers and Enantiomers

LECTURE #24: WEDNESDAY, APRIL 3rd

Polleverywhere Lecture Questions

- ☐ Color of Transition Metal Complexes (Color of Transition Metal Complexes)
- ☐ The Electromagnetic Spectrum (The Electromagnetic Spectrum)
- ☐ Absorbed vs. Observed Colors (Absorbed vs. Observed Colors)
- ☐ The UV-Vis Spectrometer (The UV-Vis Spectrometer)
- ☐ Electron Configuration of Transition Metal Cations (Electron Configuration of Transition Metal Cations)
- ☐ Coordination Number and Oxidation States (Coordination Number and Oxidation States)
- ☐ Isomers (Isomers)

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #25:

- ☐ Section 23.2 Complex Formation: The Metal-Ligand Bond (3:10)
- ☐ Section 23.2 Transition Metal Complexes: Oxidation States, Coordination Numbers, and Geometry (5:51)
- ☐ Section 23.2 Stereochemistry (1:37)
- ☐ Section 23.3 Ligands (7:15)
- ☐ Section 23.6 Bonding Theories of Transition Metal Complexes (3:38)
- ☐ Section 23.6 Crystal Field Theory Introduction (5:51)
- ☐ Section 23.6 Shapes of d orbitals (7:38)

- ☐ Section 23.6 Orbital Overlap and Orbital Energies in Crystal Field Theory (10:25)
- ☐ Section 23.6 Crystal Field Theory (9:15)
- ☐ Section 23.6 The Spectrochemical Series (12:05)
- ☐ Section 23.6 High Spin/Low Spin Complexes (7:32)
- ☐ Section 23.6 Octahedral Field Splitting vs. Tetrahedral Field Splitting (8:52)
- ☐ Section 23.6 Octahedral Field Splitting vs. Square Planar Field Splitting (7:38)
- ☐ Section 23.3 The Chelate Effect (10:47)

Mastering Chemistry Pre-Lecture #25 Assignment (due 6:30 pm Mon., Apr. 8):

- ☐ Color of Complexes
- ☐ Crystal Field Theory
- ☐ Magnetism and Crystal Field Theory
- ☐ Complex Ions and Multiple Equilibria

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #11
DUE SUNDAY, APRIL 7th at 11:59 PM

LECTURE #25: MONDAY, APRIL 8th

Polleverywhere Lecture Questions

- ☐ Crystal Field Splitting (Crystal Field Splitting)
- ☐ Number of Unpaired Electrons (Number of Unpaired Electrons)
- ☐ Magnetism (Magnetism)
- ☐ Magnetism (Magnetism)
- ☐ Relating Magnetism to Experimental Data (Relating Magnetism to Experimental Data)

LECTURE #26: WEDNESDAY, APRIL 10th

MIDTERM EXAM #2 REVIEW SESSION
CHAPTERS 19.1 – 19.5, 20, Research Project, and 23.1 – 23.4

EXAM #2: THURSDAY, APRIL 11th 8:00 – 9:45 PM

Lecture Videos to Watch or Textbook Sections to Read Before Lecture #27:

- ☐ Nuclear Chemistry
- ☐ Videos Still Need to be Made

Mastering Chemistry Pre-Lecture #27 Assignment (due 6:30 pm Mon., Apr. 15):

- ☐ Modes of Radioactive Decay
- ☐ Nuclear Decay Equations
- ☐ The Uranium Decay Series
- ☐ Identification and Characterization of Unstable and Stable Nuclei
- ☐ Radiocarbon Dating

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #12
DUE SUNDAY, APRIL 14th at 11:59 PM

LECTURE #27: MONDAY, APRIL 15th

Polleverywhere Lecture Questions

- ☐ Nuclear Stability (21.20)
- ☐ Nuclear Decay Equations (21.27)
- ☐ Rates of Radioactive Decay (21.35)
- ☐ Balancing Nuclear Reactions (21.60)
- ☐ Radiocarbon Dating (21.39)

LECTURE #27: WEDNESDAY, APRIL 17th

- ☐ Review for Final Exam

MASTERING CHEMISTRY GRADED HOMEWORK ASSIGNMENT #13
DUE SUNDAY, APRIL 21st at 11:59 PM

LAST LECTURE: MONDAY, APRIL 22nd

- ☐ Cancer Research
- ☐ Special Guest Speaker
- ☐ Most Entertaining Evaluation Comments
- ☐ Closing Inspirational Remarks

FINAL EXAM REVIEW SESSION TUESDAY, APRIL 23rd 3:00 – 4:30 PM 1000 McPHERSON
CHAPTERS 13 – 23

FINAL EXAM: FRIDAY, APRIL 26th 8:00 – 9:45 PM