



Chemistry 1210

AU13 Checklist

Before the first lecture you need to register for the following programs:

Mastering Chemistry

Learning Catalytics

Lecture #1: August 22nd, 2013

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

Mastering Chemistry Pre-Lecture #2 Assignment

Due Tuesday, August 27th at 11:00 am



Video Demonstration: Chemical and Physical Changes

- Measurement
- Counting Significant Figures
- Significant Figures in Calculations
- Dimensional Analysis
- Using Conversion Factors
- Convert Between Metric and English Units
- Introduction to Measurement

Lecture #2: August 27th, 2013

Learning Catalytics Lecture Question Topics



Word on the Street: Chemical Reactions with Water
Word on the Street: Iron Rusting

Chemical and Physical Changes in Chemical Reactions,
Measurement, Significant Figures, Dimensional Analysis, and
Barney Stinson's Opinion on Scientific Data

Mastering Chemistry Lecture #2 Quiz Practice Problems

1.2, 1.5, 1.8, 1.39, 1.40, 1.47, and 1.50

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 1.3 Properties of Matter (10:26)
- Section 1.4 Units of Measurement (5:39)
- Section 1.5 Significant Figures (8:00)
- Section 1.5 Significant Figures in Calculations (5:22)
- Section 1.6 Dimensional Analysis (8:38)

Mastering Chemistry Pre-Lecture #3 Assignment

Due Thursday, August 29th at 11:00 am



Video Demonstration: The Atomic Weight of M&M's

- Atom Components and Chemical Symbols
- Subatomic Particles
- Cations and Anions
- Isotopes
- Mass Spectroscopy
- Isotopes and Atomic Mass
- Avogadro's Number

Lecture #3: August 29th, 2013

Learning Catalytics Lecture Question Topics

Dimensional Analysis, Atomic Structure, Atomic Weight, and the Mass Spectrometer

Mastering Chemistry Lecture #3 Quiz Practice Problems

1.56, 1.49, 2.2, 2.8, 2.23, 2.25, 2.26, 2.81, and 2.35

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 2.3 Modern View of Atomic Structure Part 1 (5:55)
- Section 2.3 Modern View of Atomic Structure Part 2 (7:01)
- Section 2.3 Ions (5:32)
- Section 2.4 Isotopes and Relative Atomic Mass Part 1 (3:29)
- Section 2.4 Isotopes and Relative Atomic Mass Part 2 (3:29)
- Section 2.4 Avogadro's Constant and the Mole (7:06)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, September 2nd at 11:00 am



Pre-Lecture #2 Assignment Adaptive Follow-Up
Pre-Lecture #3 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #4 Assignment

Due Tuesday, September 3rd at 11:00 am

- Bonding in Electrically Neutral Compounds
- Ions and the Periodic Table
- Chemical Bonding
- Ionic Compounds Nomenclature and Formulas
- Ionic Compound Formulas
- Naming Binary Molecular Compounds
- Naming Covalent Compounds
- Acid Names

Lecture #4: September 3rd, 2013

Learning Catalytics Lecture Question Topics

Avogadro's Constant and the Mole, Nomenclature, and Nomenclature of Acids.

Mastering Chemistry Lecture #4 Quiz Practice Problems

3.33, 3.34, 2.65, 2.67, 2.71, 2.68, 2.66, 2.73, 2.74, 2.72, 2.69, & 2.70

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 2.6 Molecules and Molecular Compounds (4:20)
- Section 2.7 Ions and Ionic Compounds (8:17)
- Section 2.8 Naming Inorganic Compounds Part 1 (7:30)
- Section 2.8 Naming Inorganic Compounds Part 2 (5:20)
- Section 2.8 Naming Inorganic Compounds Part 3 (12:17)
- Section 2.8 Naming Inorganic Compounds Part 4 (7:48)

Mastering Chemistry Pre-Lecture #5 Assignment

Due Thursday, September 5th at 11:00 am



Video Demonstration: Conservation of Mass

Video Demonstration: Chemical Reactions

- Chemical Equations
- Combination, Decomposition, and Combustion Reactions
- Formula Weights
- Percent Composition
- Ionic Compound Analysis
- Interactive Worked Example: The Mole Concept –
Converting Between Mass and Numbers of Atoms
- Interactive Worked Example: The Mole Concept

Lecture #5: September 5th, 2013

Learning Catalytics Lecture Question Topics

Chemical Equations, Balancing Chemical Equations, and Chemical Reactions

Mastering Chemistry Lecture #5 Quiz Practice Problems

3.1, 3.2, 3.3, 3.4, 3.11, 3.12, 3.13, 3.19, and 3.6

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 3.1 Chemical Reactions (7:03)
- Section 3.1 Balancing Chemical Reactions (9:16)

- Section 3.2 Patterns of Chemical Reactivity (7:47)
- Section 3.3-3.4 Formula Weight and Molar Mass (6:32)
- Section 3.4 Avogadro's Constant and the Mole (7:06)
- Section 3.4 Grams to Moles Example Problem (2:23)
- Section 3.4 Grams to Atoms Example Problem (3:44)
- Section 3.4 Percent Mass Example Problem (4:14)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, September 9th at 11:00 am



Pre-Lecture #4 Assignment Adaptive Follow-Up
Pre-Lecture #5 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #6 Assignment

Due Tuesday, September 10th at 11:00 am



Video Demonstration: Observing Chemical Reactions

- Interactive Worked Example: Obtaining Empirical Formula from Experimental Data
- Interactive Worked Example: Chemical Formulas as Conversion Factors
- Empirical Formula by Combustion Analysis
- Percent Composition and Formulas
- Learning Stoichiometry
- Mass-to-Mass Conversions in Stoichiometry
- Masses of Components in a Mixture
- Interactive Worked Example: Limiting Reactants and Theoretical Yield
- Limiting Reactants
- Percent Yield
- Stoichiometry

Lecture #6: September 10th, 2013

Learning Catalytics Lecture Question Topics

Theoretical Yield, Limiting Reactants, % Yield, Empirical Formulas, Molecular Formulas, Quantitative Information From Equations

Mastering Chemistry Lecture #6 Quiz Practice Problems

3.7, 3.8, 3.65, 3.77, 3.83, 3.52, 3.53, 3.68, 3.75, 3.81, and 3.84

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 3.5 Empirical Formula (2:58)

- Section 3.5 Empirical Formula Calculation (4:48)
- Section 3.5 Molecular Formula (2:15)
- Section 3.5 Molecular Example Problem (5:40)
- Section 3.6 Stoichiometry (9:32)
- Section 3.6 Stoichiometry at the Atomic Level (4:07)
- Section 3.7 Limiting Reactants (6:26)
- Section 3.7 Excess Reactants Remaining Example (4:36)
- Section 3.7 Percent Yield (4:18)
- Chapter 3 Stoichiometry Summary Example #1 (5:55)
- Chapter 3 Stoichiometry Summary Example #2 (7:13)

Mastering Chemistry Pre-Lecture #7 Assignment

Due Thursday, September 12th at 11:00 am

- Animation – Evaluating Electrolytes and non-Electrolytes
- Net Ionic Equations
- Aqueous Reactions
- Acid-Base Reactions
- Acids, Bases, and Salts
- Pause and Predict: Acid-Base Neutralization Reactions
- Pause and Predict: Oxidation-Reduction in Aqueous Soln
- Oxidation States
- Activity Series

Lecture #7: September 12th, 2013

Learning Catalytics Lecture Question Topics

Electrolytes, Precipitation Reactions and Determining Rules for Solubility Based on Experimental Data, Net Ionic Equations, Oxidation-Reduction Reactions, and Oxidation Numbers

Mastering Chemistry Lecture #7 Quiz Practice Problems

4.1, 4.2, 4.4, 4.21, 4.24, 4.52, and 4.48

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 4.1 Reactions in Aqueous Solutions (4:48)
- Section 4.1 Electrolytes (8:32)
- Section 4.2 Precipitation Reactions (5:45)
- Section 4.2 Metathesis and Net Ionic Equations (9:04)
- Section 4.3 Acids and Bases (8:42)
- Section 4.3 Neutralization Reactions and Gaseous Products (8:40)
- Section 4.4 Oxidation Reduction Reactions and Assigning Oxidation Numbers Part 1 (7:13)

- Section 4.4 Oxidation Reduction Reactions and Assigning Oxidation Numbers Part 2 (6:09)
- Section 4.4 Assigning Oxidation Numbers Example Problem (10:01)
- Section 4.4 Oxidation of Metals by Acids (6:52)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, September 16th at 11:00 am



Pre-Lecture #6 Assignment Adaptive Follow-Up
Pre-Lecture #7 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #8 Assignment

Due Tuesday, September 17th at 11:00 am

- Concentration
- Ion Concentration
- Molarity
- Solution Stoichiometry



Video Demonstration: Dilution

Lecture #8: September 17th, 2013

Learning Catalytics Lecture Question Topics

Oxidation-Reduction Reactions, Chemical Reactions, Electrolytes, Reactions Involving Gaseous Products, Concentration, and Stoichiometry in Solution

Mastering Chemistry Lecture #8 Quiz Practice Problems

4.5, 4.8, 4.51, 4.53, 4.3, 4.56, 4.55, 4.62, 4.67, 4.73, 4.72, and 4.79



Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 4.5 Concentrations of Solutions (7:25)
- Section 4.5 Concentrations of Solutions Example Problem (5:41)
- Section 4.5 Dilution (8:37)
- Section 4.6 Solution Stoichiometry and Chemical Analysis (4:44)

Mastering Chemistry Pre-Lecture #9 Assignment

Due Thursday, September 19th at 11:00 am

- Animation – Acid-Base Titration
- Electrolytic Properties and Molarity
- Acid-Base Titration

- Titrations and Solution Stoichiometry
- Precipitation Titration
- Interactive Worked Example: Stoichiometry
-  Video Demonstration: Electrolytic Titration
-  Video Demonstration: Chapter 4 Stoichiometry

Lecture #9: September 19th, 2013

Learning Catalytics Lecture Question Topics

Stoichiometry in Solution, Titrations, and cumulative exercises from Chapters 3 and 4

Mastering Chemistry Lecture #9 Quiz Practice Problems
4.21, 4.87, 4.93, 4.80, 4.81, 4.86, and 4.88

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 4.6 Titrations (7:50)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, September 23rd at 11:00 am



Pre-Lecture #8 Assignment Adaptive Follow-Up

Pre-Lecture #9 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #10 Assignment

Due Tuesday, September 24th at 11:00 am

- Energy, Heat, and Work
- 1st Law of Thermodynamics
- Specific Heat
- Coffee Cup Calorimetry
- Enthalpy of a Phase Change
- Video Demonstration: Calorimetry

Lecture #10: September 24th, 2013

Learning Catalytics Lecture Question Topics

Heat of Chemical Reactions, Enthalpy, State Functions, Endothermic vs. Exothermic Reactions, Standard of Enthalpy of Formation, and Standard Enthalpy of Reaction

Mastering Chemistry Lecture #10 Quiz Practice Problems
5.34, 5.32, 5.42, 5.69, and 5.73

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 5.1 The Nature of Energy (7:06)
- Section 5.2 Heat and the First Law of Thermodynamics (4:25)
- Section 5.2 Relationships Involving Heat (7:10)
- Section 5.2 Thermochemical Reactions (5:41)
- Section 5.3 Enthalpy (9:26)

Mastering Chemistry Pre-Lecture #11 Assignment

Due Thursday, September 26th at 11:00 am

- Review for Exam #1 (Chapters 1 – 4)

Lecture #11: September 26th, 2013

Learning Catalytics Lecture Question Topics

Exam #1 Review Session

Midterm Exam #1: Thursday, September 26th, 8:00 PM – 9:15 PM Chapters 1 – 4

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, September 30th at 11:00 am



Pre-Lecture #10 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #12 Assignment

Due Tuesday, October 1st at 11:00 am

- Procedure for Hess's Law
- Application of Hess's Law
- Chemical Energy
- Standard Enthalpy of Reaction
- Formation Reactions
- Enthalpy
- Interactive Worked Example: Stoichiometry Involving ΔH

Lecture #12: October 1st, 2013

Learning Catalytics Lecture Question Topics

Enthalpy and Stability, Heat, Calorimetry, and Hess's Law

Mastering Chemistry Lecture #12 Quiz Practice Problems

5.70, 5.53, 5.44, 5.45, 5.50, 5.55, 5.65, and 5.66

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 5.6 Hess's Law Example (6:37)
- Section 5.6 Hess's Law Example #2 (8:52)
- Section 5.7 Standard Enthalpies of Formation (5:58)
- Section 5.7 Standard Enthalpies of Formation Part 2 (3:45)
- Section 5.7 Enthalpy and Reaction Stoichiometry (5:58)

Mastering Chemistry Pre-Lecture #13 Assignment

Due Thursday, October 3rd at 11:00 am

- Properties of Waves
- The Photoelectric Effect
- Using Microwave Radiation to Heat Coffee
- Atomic Spectra
- Interactive Worked Example: Photon Energy



Video Demonstration: Discharge Tubes

Lecture #13: October 3rd, 2013

Learning Catalytics Lecture Question Topics

How Quantum Mechanics Puzzled Sheldon Cooper, Properties of Waves, The Photoelectric Effect, Bohr Hydrogen Atom, Quantized Energy and Photons

Mastering Chemistry Lecture #13 Quiz Practice Problems

6.3, 6.5, 6.17, 6.18, 6.31, 6.32, 6.37, 6.36, and 6.27

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 6.1 Electronic Structure of Atoms Overview (7:05)
- Section 6.1 Electromagnetic Radiation (6:46)
- Section 6.1 Energy, Frequency, Wavelength Example Problem (2:05)
- Section 6.2 Wave-Particle Duality (8:01)
- Section 6.3 Line Spectra and the Bohr Model Part 1 (5:41)
- Section 6.3 Line Spectra and the Bohr Model Part 2 (10:02)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, October 7th at 11:00 am



Pre-Lecture #12 Assignment Adaptive Follow-Up
Pre-Lecture #13 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #14 Assignment

Due Tuesday, October 8th at 11:00 am

- Interactive Activity – Bohr Model
- Interactive Worked Example: Wavelength of Light for a Transition in the Hydrogen Atom
- Schrodinger Equation and Wave Functions
- Animation – Electron Configurations
- Interactive Worked Example: Electron Configurations from the Periodic Table
- Orbital-Filling Diagrams

Lecture #14: October 8th, 2013

Learning Catalytics Lecture Question Topics

Bohr Hydrogen Atom, Schrodinger Equation, Electron Configuration, Energies of Atomic Orbitals, Atomic Orbitals, Electrons in Atomic Orbitals

Mastering Chemistry Lecture #14 Quiz Practice Problems

6.6, 6.7, 6.49, 6.50, 6.70, 6.65, 6.52, 6.51, and 6.54

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 6.4 The Wave Behavior of Matter (4:07)
- Section 6.5 Quantum Mechanics (9:03)
- Section 6.5 Atomic Orbitals (7:57)
- Section 6.5 Energies of Atomic Orbitals (6:20)
- Section 6.8 Electron Configurations and Block Diagrams Overview (6:11)
- Section 6.8 Electron Configuration and Orbital Block Diagrams for Elements 1-18 (8:54)
- Section 6.8 Electron Configuration and Orbital Block Diagrams for Elements 1-18 (10:32)
- Section 6.8 Electron Configuration of Ions (3:47)

Mastering Chemistry Pre-Lecture #15 Assignment

Due Thursday, October 10th at 11:00 am

- Quantum Numbers
- Quantum Numbers and Electron Configuration
- Relating Quantum Numbers and Electron Configuration to the Periodic Table
- Interactive Worked Example: Electron Configurations and Magnetic Properties for Ions

Lecture #15: October 10th, 2013

Learning Catalytics Lecture Question Topics

Quantum Numbers, Quantum Numbers and Electron Configuration, Nodes, Unpaired Electrons, and Many Electron Atoms

Mastering Chemistry Lecture #15 Quiz Practice Problems
6.53, 6.55, 6.56, 6.57, 6.60, 6.71

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 6.5 Quantum Numbers (8:23)
- Section 6.5 Assigning Quantum Numbers to N (5:30)
- Section 6.5 Assigning Quantum Numbers to Cr (4:15)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, October 14th at 11:00 am



Pre-Lecture #14 Assignment Adaptive Follow-Up
Pre-Lecture #15 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #16 Assignment

Due Tuesday, October 15th at 11:00 am

- Ionic Radii
- Ionization Energy
- Animation – Electron Affinity



Video Demonstration: Periodic Trends

Lecture #16: October 15th, 2013

Learning Catalytics Lecture Question Topics

Periodic Trends: Effective Nuclear Charge, Atomic and Ionic Radii, Isoelectronic Species, Ionization Energy, Electron Affinity, Electronegativity, and Magnetic Properties

Mastering Chemistry Lecture #16 Quiz Practice Problems
7.1, 7.3, 7.13, 7.15, 7.25, 7.27, 7.37, and 7.47

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 7.1 Development of the Periodic Table (5:29)
- Section 7.1 Main Group Elements and Transition Metals (5:57)

- Section 7.3 Atomic Radii (4:51)
- Section 7.3 Ionic Radii (5:34)
- Section 7.3 Isoelectronic Series (4:28)
- Section 7.4 Ionization Energy Part 1 (4:44)
- Section 7.4 Ionization Energy Part 2 (8:52)
- Section 7.5 Electron Affinity (5:05)
- Section 8.4 Electronegativity (2:17)
- Section 7.6 Magnetic Properties (4:15)

Mastering Chemistry Pre-Lecture #17 Assignment

Due Thursday, October 17th at 11:00 am

- Study for Exam #2 (Chapters 5 – 7)

Lecture #17: October 17th, 2013

Learning Catalytics Lecture Question Topics

Exam #2 Review Session

Midterm Exam #2: Thursday, October 17th, 8:00 PM – 9:15 PM
Chapters 5 – 7

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, October 21st at 11:00 am



Pre-Lecture #16 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #18 Assignment

Due Tuesday, October 22nd at 11:00 am

- Covalent, Polar Covalent, and Ionic Bonds
- Introduction to Lewis Structures
- Bond Polarity
- Hydrogen Molecule Bond Formation
- Formation of a Chemical Bond

Lecture #18: October 22nd, 2013

Learning Catalytics Lecture Question Topics

Ionic vs. Covalent Bonding, Thermochemistry of Bond Formation, Lattice Energy, and Attractive and Repulsive Forces in Bond Formation

Mastering Chemistry Lecture #18 Quiz Practice Problems

8.2, 8.3, 8.4, 8.13, 8.17, 8.22, and 8.27

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 8.1 Chemical Bonding Overview (5:22)
- Section 8.1 Lewis Theory (6:54)
- Section 8.2 Ionic Bonding (8:11)
- Section 8.3 Covalent Bonding (10:14)
- Section 8.4 Bond Polarity and Electronegativity (8:08)
- Section 8.4 Electronegativity (2:17)
- Section 8.4 Ionic vs. Covalent Bonding (3:58)
- Section 8.4 Dipole Moments (6:48)

Mastering Chemistry Pre-Lecture #19 Assignment

Due Thursday, October 24th at 11:00 am

- Octet Rule
- Lewis Structures and the Octet Rule
- Bond Angles
- Geometry, Bond Angles, Hybridization, and Polarity
- Covalently Bonded Molecules

Lecture #19: October 24th, 2013

Learning Catalytics Lecture Question Topics

Electron Density, Lewis Symbols, Bond Dissociation Energy, Covalent Bonding and Bond Lengths, Bond Polarity and Electronegativity, Drawing Lewis Structures, and VSEPR

Mastering Chemistry Lecture #19 Quiz Practice Problems

8.35, 8.42, 8.44, 9.14, 9.18, 9.19, and 9.20

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 9.1 – 9.2 Molecular Shapes and VSEPR (9:12)
- Section 9.2 – 9.3 AX_n (X = H, X, OH) VSEPR Shapes and Polarity Part 1 (9:09)
- Section 9.2 – 9.3 AX_n (X = H, X, OH) VSEPR Shapes and Polarity Part 2 (7:08)
- Section 9.2 – 9.3 AX_n (X = H, X, OH) VSEPR Shapes and Polarity Part 3 (8:07)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, October 28th at 11:00 am



Pre-Lecture #18 Assignment Adaptive Follow-Up
Pre-Lecture #19 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #20 Assignment

Due Tuesday, October 29th at 11:00 am

- Formal Charges and Resonance
- Formal Charge for a Diatomic Molecule
- Intro to Resonance
- Formal Charge and Molecular Stability

Lecture #20: October 29th, 2013

Learning Catalytics Lecture Question Topics

Molecular Shapes: Sketch a molecule and determine its: Electron Domain Geometry, Molecular Geometry, Bond Angles, Polarity, and Hybridization of Central Atom

Mastering Chemistry Lecture #20 Quiz Practice Problems

8.47, 8.48, 8.49, 8.50, 8.53, 8.55, 8.56, 8.68, 9.43, and 9.44

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 9.2 – 9.3 AX_n VSEPR Shapes of Oxyacids (4:54)

Mastering Chemistry Pre-Lecture #21 Assignment

Due Thursday, October 31st at 11:00 am

- Bonding in the Benzene Molecule
- Orbital Shapes
- Orbital Overlap: Sigma and Pi Bonding
- Molecular Orbitals and Bond Order
- Molecular Orbitals
- Magnetic Properties



Video Demonstration: Properties of O₂ and N₂

Lecture #21: October 31st, 2013

Learning Catalytics Lecture Question Topics

Orbitals, Hybrid Orbitals, Orbital Overlap, sigma and pi bonding, Atomic Orbitals vs. Molecular Orbitals, Potential Energy and Bonding, Molecular Orbital Diagrams, and Paramagnetism vs. Diamagnetism

Mastering Chemistry Lecture #21 Quiz Practice Problems

8.57, 8.58, 9.51, 9.52, 9.58, 9.61, 9.77, 9.78, 9.79, and 9.80

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 9.4 Quantum Mechanics and Chemical Bonding (7:46)
- Section 9.4 Orbital Overlap in Covalent Bonding (8:37)
- Section 9.5 Hybrid Orbitals (8:34)
- Section 9.6 Multiple Bonds (11:41)
- Section 9.7 Molecular Orbital Theory (10:47)
- Section 9.7 Molecular Orbital Diagrams (11:06)
- Section 9.8 2nd Row Diatomic Molecular Orbital Diagrams (6:54)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, November 4th at 11:00 am



Pre-Lecture #20 Assignment Adaptive Follow-Up
Pre-Lecture #21 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #22 Assignment

Due Tuesday, November 5th at 11:00 am

- Gas Pressure
- Interactive Simulation – Avagadro's Law
- The Ideal Gas Law
- Charles's Law



Video Demonstration: Gas Laws

- Interactive Worked Example: Ideal Gas Law

Lecture #22: November 5th, 2013

Learning Catalytics Lecture Question Topics

Relationship Between Pressure and Temperature, Ideal Gas Simulation, Pressure, and Gas Laws (10.9)

Mastering Chemistry Lecture #22 Quiz Practice Problems

10.3, 10.5, 10.9, 10.21, 10.27, and 10.28

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 10.1 Characteristics of Gases (5:07)
- Section 10.2 Pressure (7:08)
- Section 10.3 Gas Laws Example Problem #1 (3:26)
- Section 10.3 Gas Laws Example Problem #2 (2:53)
- Section 10.3 Gas Laws Example Problem #3 (5:06)
- Section 10.4 The Ideal Gas Equation (6:20)

Mastering Chemistry Pre-Lecture #23 Assignment

Due Thursday, November 7th at 11:00 am

- Study for Exam #3 (Chapters 8 – 9)

Lecture #23: November 7th, 2013

Learning Catalytics Lecture Question Topics

Exam #2 Review Session

Midterm Exam #3: Thursday, November 7th, 8:00 PM – 9:15 PM Chapters 8 – 9

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, November 11th at 11:00 am



Pre-Lecture #22 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #24 Assignment

Due Tuesday, November 12th at 11:00 am

- Characterization of a Gas Using Experimental Data
- Gas Law Stoichiometry
- Interactive Worked Example: Gases in Chemical Reactions
- Dalton's Law of Partial Pressures
- Partial Pressure and the Ideal Gas Law
- The Kinetic Molecular Theory of Gases



Video Demonstration: Diet Coke Can

Video Demonstration: Kinetic Molecular Theory

Lecture #24: November 12th, 2013

Learning Catalytics Lecture Question Topics

Investigating the Gas Laws

Mastering Chemistry Lecture #24 Quiz Practice Problems

10.58, 10.30, 10.60, 10.29, 10.56, and 10.70

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 10.5 Ideal Gas Law Example Problem #1 (5:00)
- Section 10.5 Ideal Gas Law Example Problem #2 (5:05)
- Section 10.5 Ideal Gas Law Example Problem #3 (3:17)

- Section 10.5 Ideal Gas Law Example Problem #4 (2:41)
- Section 10.5 Ideal Gas Law Example Problem #5 (7:37)
- Section 10.6 Gas Mixtures and Partial Pressures (5:13)
- Section 10.6 Gas Mixtures and Partial Pressures Example Problem #1 (1:37)
- Section 10.6 Gas Mixtures and Partial Pressures Example Problem #2 (1:51)
- Section 10.6 Collecting Gas Over Water (2:28)
- Section 10.6 Collecting Gas Over Water Example Problem (5:03)
- Section 10.7 Kinetic Molecular Theory of Gases (4:46)
- Section 10.7 Distribution of Molecular Speeds (5:16)

Mastering Chemistry Pre-Lecture #25 Assignment

Due Thursday, November 14th at 11:00 am

- The Behavior of Gas Molecules
- Ideal vs. Real Gases
- The van der Waals Equation

Lecture #25: November 14th, 2013

Learning Catalytics Lecture Question Topics

Graham's Law of Effusion, Mean Free Path, Rates of Effusion, Ideal vs. Real Gases

Mastering Chemistry Lecture #25 Quiz Practice Problems

10.85, 10.88, 10.115, 10.89, 10.90, 10.96, 10.117, and 10.116

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 10.8 Molecular Effusion and Diffusion (6:13)
- Section 10.8 Rate of Effusion Example Problem (3:05)
- Section 10.9 Real Gases: Deviations from Ideal Behavior (3:50)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, November 18th at 11:00 am





Pre-Lecture #24 Assignment Adaptive Follow-Up
Pre-Lecture #25 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #26 Assignment

Due Tuesday, November 19th at 11:00 am

- Intermolecular Forces
- London Dispersion Forces

- Dipole-Dipole Interactions
- Animation – Hydrogen Bonding
- Viscosity, Surface Tension, and Intermolecular Forces
-  Video Demonstration: BP Regions in a Phase Diagram
-  Video Demonstration: Phase Diagrams
- Interactive Activity – Phase Diagrams of Carbon Dioxide

Lecture #26: November 19th, 2013

Learning Catalytics Lecture Question Topics

Energy Changes Accompanying Phase Changes, Phase Transitions, Vapor Pressure, Phase Diagrams, and Heating Curves

Mastering Chemistry Lecture #26 Quiz Practice Problems
11.41, 11.43, 11.52, 11.55, 11.59, 11.60, 11.61, and 11.39

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 11.4 Phase Changes (10:00)

Mastering Chemistry Pre-Lecture #27 Assignment

Due Thursday, November 21st at 11:00 am

- Attractive Forces within Solids
- Packing of Spheres in Crystalline Solids
- Cubic Structures

Lecture #27: November 21st, 2013

Learning Catalytics Lecture Question Topics

Types of Solids, Unit Cells and Crystal Lattices, Packing Efficiency, Alloys, and Molecular Orbital Model of Metals

Mastering Chemistry Lecture #27 Quiz Practice Problems
12.12, GIST 12.1, Go Figure 12.13, 12.2, Unit Cell and Crystal Packing, 12.37, and 12.48

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 12.2 Structures of Solids (3:18)
- Section 12.2 Unit Cells and Crystal Lattices (6:27)
- Section 12.3-12.4 Structures of Metallic Solids (9:28)
- Section 12.3-12.4 Density Example Problem (6:58)

Mastering Chemistry Knewton Adaptive Follow-Up

Due Monday, November 25th at 11:00 am



Pre-Lecture #26 Assignment Adaptive Follow-Up
Pre-Lecture #27 Assignment Adaptive Follow-Up

Mastering Chemistry Pre-Lecture #28 Assignment

Due Tuesday, November 26th at 11:00 am

- Unit Cells and Density
- Structures of Binary Ionic Crystals
- Characterization of a Lithium Sulfide Crystal
- Identification of Solids
- Introduction to Band Theory
- Interactive Activity – Band Structure

Lecture #28: November 26th, 2013

Learning Catalytics Lecture Question Topics

Structures of Solids, Density, Conductivity in Solids, Band Gaps in Semiconductors, and Empirical Formulas

Mastering Chemistry Lecture #28 Quiz Practice Problems

12.52, 12.53, 12.54, 12.67, 12.65, 12.51, and 12.55

Additional Textbook Sections to Read/Videos to Watch After Lecture

- Section 12.5-12.6 Close Packing (7:49)
- Section 12.5-12.6 Bonding in Solids (6:45)

Mastering Chemistry Pre-Lecture #29 Assignment

Due Tuesday, December 3rd at 11:00 am

- Study for the Final Exam

Last Lecture: December 3rd, 2013

Learning Catalytics Lecture Question Topics

- Special Guest Speaker
- Most Entertaining Evaluation Comments
- Closing Inspirational Remarks

Final Exam: Chapters 1 – 10, and 12

12:45 PM Lecture: Tuesday, December 10th, 2:00 – 3:45 PM

11:10 AM Lecture: Wednesday, December 11th, 10:00 – 11:45 AM