

Sept 4

1. Welcome
2. Course outline
3. Textbook
4. Review assignment

Sept 5

1. Discussion of grade 11 units 1&2
2. Continue working on review

Sept 6

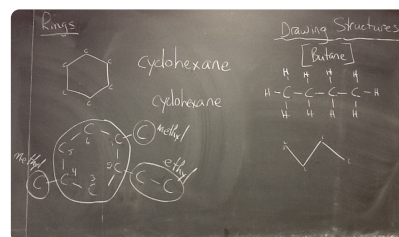
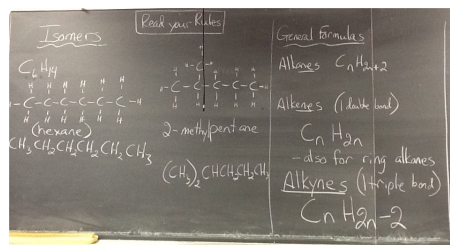
1. Math of chemistry
 - A. Mole
 - B. % composition, empirical, molecular
 - C. Stoichiometry
 - D. Other formulas
2. Work on review

Sept 7

1. Handin review
2. Begin organic chemistry
 - A. Read page 6 - past, present, misconception
 - B. Importance of carbon
 - C. Read section 1.1 functional groups - multiple bonds, oxygen and nitrogen, electronegativity, polar, intermolecular forces, solubility, state, bp, mp
3. Hydrocarbons - chains of carbon surrounded by hydrogen atoms
4. Naming package
 - A. Quiz on Wednesday and Friday next week

Sept 10

1. Building hydrocarbons
 - A. Shape, isomers, Cis and trans
2. Naming cyclo
3. Work on naming



Sept 11

1. Properties of hydrocarbons, non polar, substitution and addition reaction
2. Get ready for quiz tomorrow

Sept 12

1. Quiz #1
2. Naming halo, nitro
3. Naming amino

Sept 13

1. More on reactions introduce Markovnikov's rule
2. Substitution
 - A. Halogenation
3. Addition
 - A. Halogenation
 - B. Hydrogenation - Pt catalyst
 - C. Hydrohalogenation
 - D. Hydration
4. Elimination reaction - strong base required
5. Textbook Page 27, 31, 37

Sept 14

1. Quiz #2
2. Naming alcohols, ethers, ketone and aldehydes
3. Working on part 3

Sept 17

1. Carboxylic acids
2. Esters
3. Work

Sept 18

1. Test # 1
2. Amides
3. aromatics

Sept 19

1. Quiz # 3

2. Reactions #2

- A. Alkenes to alcohols - addition
- B. Alcohols to alkenes - elimination (sulfuric acid)
- C. Alcohols to ethers - condensation reaction (dehydration - sulphuric acid)
- D. Alcohol to aldehyde - oxidation of primary alcohol
- E. Aldehyde to alcohol - reduction (hydrogenation)
- F. Alcohol to ketone - oxidation of secondary alcohol
- G. Ketone to alcohol - reduction (hydrogenation)

Sept 20

1. Quiz #4

2. Reactions #3

- A. Preparing amines
- B. Aldehydes to carboxylic acid
- C. Esterification - condensation reaction
- D. Amide formation - just like esters
- E. Hydrolysis - add water!

Sept 21

PD day- no classes

Sept 24

- 1. Orgo reactions math
- 2. Three problems overhead
- 3. Worksheet practice problems
- 4. Get ready for naming test

Sept 25

1. Work period

- A. Review naming chemistry
- B. Textbook chemical reactions
- C. Orgo math worksheet
- D. Physical properties info gathering
 - a. Boiling, melting, solubility, polar and non polar, intermolecular forces

Sept 26

1. Naming test
2. Continue with working independently

Sept 27

1. Physical properties of organic families
 - A. Melting point - movement
 - a. Polarity
 - b. Packing ability
 - B. Boiling point - separation
 - a. Polarity
 - b. Surface area
 - c. Chain length
 - d. Branching
 - C. Solubility
 - a. Polarity
 - b. Parts of the molecule
 1. Functional group
 2. Hydrocarbon size
 - D. Solubility
2. Intermolecular forces
 - A. Nonpolar - London dispersion force
 - B. Polar
 - a. dipole dipole
 - b. hydrogen bonding
3. Examples
4. Read and make notes from textbook pages on board

Sept 28

1. Work period
 - A. Orgo math
 - B. Orgo reactions
 - C. Orgo properties
2. Review questions chapter 1

Oct 1

1. Polymers

2. Handout / worksheet

Oct 2

1. Reactions worksheet
2. Work

Oct 3

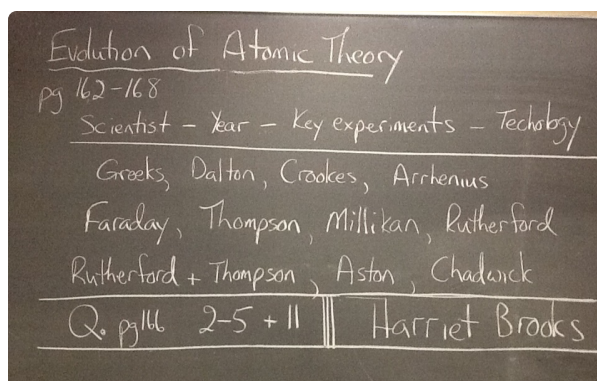
1. Get ready for test
2. Ch 1 review
3. Ch 2 review couple of questions
4. Unit review

Oct 4

1. Organic chemistry unit test

Oct 5

1. Unit 2 - atomic structure
 - A. Greatest discoveries in chemistry video
 - B. Section 2.1 know the scientists
 - C. Section 2.2 know Harriet



Evolution of Atomic Theory
pg 162-168

Scientist	Year	Key experiments	Techology
Greeks, Dalton, Crookes, Arrhenius			
Faraday, Thompson, Millikan, Rutherford			
Rutherford + Thompson, Aston, Chadwick			
Q. pg 166	2-5 + 11		Harriet Brooks

Oct 9

1. Intro to quantum
 - A. Blackbody radiation
 - B. Photoelectric effect
 - C. Bohr's atomic theory - H spectrum
2. Read 3.3-3.4

Oct 10-11

1. Bohr theory
2. Quantum numbers - notes on board

Oct 12

1. Present meaning of quantum numbers
2. Energy level diagrams

Oct 15

1. More energy diagrams

2. Electron configuration
3. Explaining P/T, ion charges, magnetism, and weird electron configurations

Oct 16

1. Worksheet on electron configuration

Oct 16
1) Concerns?
2) Read 3.7 + 3.8
3) Practice
pg 197: 1, 5, 9, 12, 13, 14
pg 219 + 220

Louis de Broglie
Erwin Schrödinger
Heisenberg Uncertainty Principle
Electron Probability Density
Limitations of Quantum Mechanics
Applications of Quantum Mechanics

2. Reading on quantum theory
3. Applications of quantum theory

Oct 16
Activities for today:
(1) Worksheet - practice
(2) Making a New Periodic Table
could be done (3) Note: 3.7 + 3.8 Scientists, Theories
Limitations, Applications
should be done (4) Pg 197 1, 5, 9, 12, 13, 14

Oct 17

Oct 18

1. Bonding handout

Oct 19

1. Quiz them about bonding
2. Drawing Lewis structures
3. Rules
4. Resonance
5. Coordinate covalent bonds

6. Work from textbook

Oct 22

1. Lewis structures
 - A. Charges with poly atomic ions and coordinate covalent bonds
 - B. Draw a couple
2. Valence bond theory
 - A. Empirical evidence
 - B. Hybridization
 - C. Evidence
 - D. Multiple bonds

Oct 23

1. Notes on VSEPR - questions
2. Textbook questions - shapes

Oct 24

1. Discussion on valence bond theory
2. VSEPR worksheet - did not get
3. Notes on intermolecular forces - skim over 4.3 and 4.4
 - A. Polar molecules textbook questions
 - B. Intermolecular forces textbook questions

Oct 25

1. Aggregates
2. Ionic crystals - lattice energy
3. Metal crystals
4. Molecular crystals
5. Network covalent crystals

Oct 29

Review of solids

Working on review sections

Oct 30

Working on review sections

Oct 31

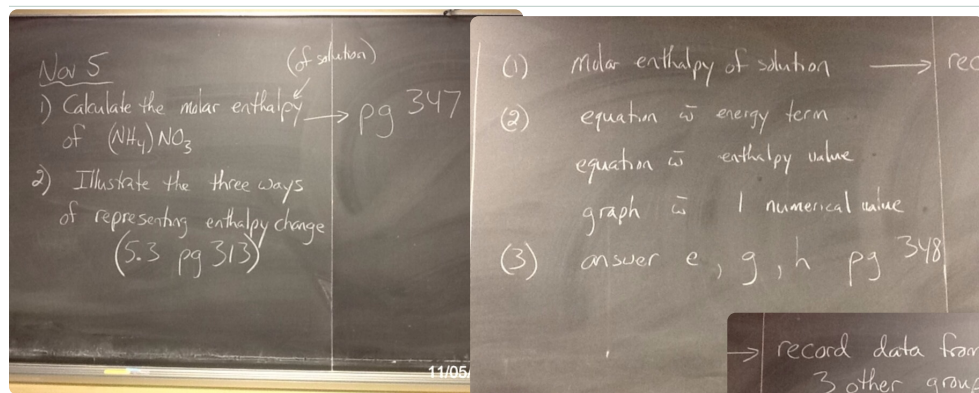
Unit test - molecular and atomic theory and structure

Nov 1

1. Terms of thermochemistry
2. Calculating $q=mcT$
3. Signs +/- are important
4. Comparing q and H

Nov 2

1. Molar enthalpy
2. Textbook section 5.2
3. Worksheet on calorimetry and molar enthalpy

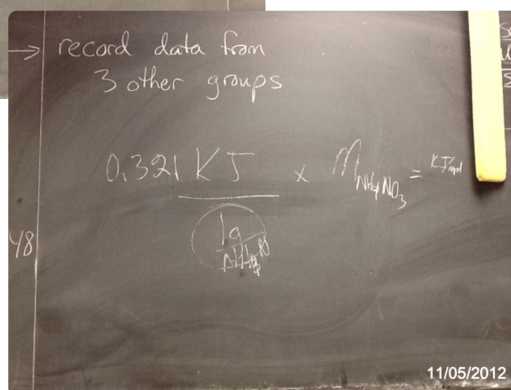


Nov 5

1. Activity to calculate the molar enthalpy of ammonium

nitrate

2. Represent the thermochemical equation



Nov 6

1. Lab results discussion

2. Lab quiz

Nov 7

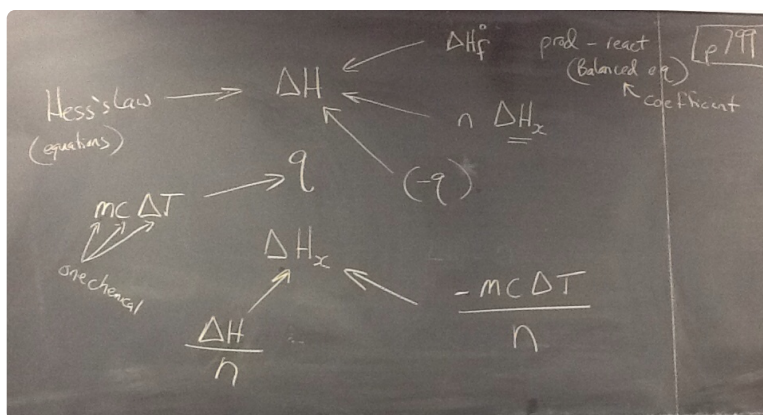
1. Hess's law
2. Worksheet 5 problems
3. Textbook problems

Nov 8

1. Multistep enthalpy problems
2. Hess's law, calorimetry, molar enthalpy

Nov 12

1. Standard formation conditions
2. Version
3. Sum of coefficients



Standard heats of formation, enthalpies of formation, standard conditions for one mole of the substance. Hess's law: sum of products - sum of reactants. Incorporate the coefficients.

Nov 13

1. Multistep enthalpy problems
2. Worksheet: energy, enthalpy, calorimetry

Nov 14

1. Intro to rates

- A. Rate is a change in concentration over a change in time
- B. A rate is negative with respect to the reactants and positive with respect to the products
- C. The rate is associated with the mole ratio
- D. Graphs can illustrate rate by their slope
- E. Instantaneous vs average
- F. Measuring reaction rates - volumes of gas, conductivity, pH, colour
- G. Text questions

Nov 15

- 1. Reminder concentration?, rate?, slope?, coefficients and rate?
- 2. Rate laws
- 3. Order of reactions

Nov 16

- 1. Worksheet on rate law expressions
- 2. Factors that affect rates - research via reading 6.2 and 6.5

Nov 19

- 1. Graphs and rates - end of 6.3
- 2. Explaining rate is proportional to $1/dt$
- 3. Shape of the line determines confidence of relationships between variables
- 4. Looking for the straight line, curves suggest something else is going on
- 5. Tin and iodine activity

Nov 20

- 1. Results of tin and iodine lab
- 2. Questions on back of lab sheet

Nov 21

- 1. Mechanisms of reactions
- 2. Defending a reaction mechanism
- 3. Rate law associated with slowest step
- 4. Slow step = high activation energy

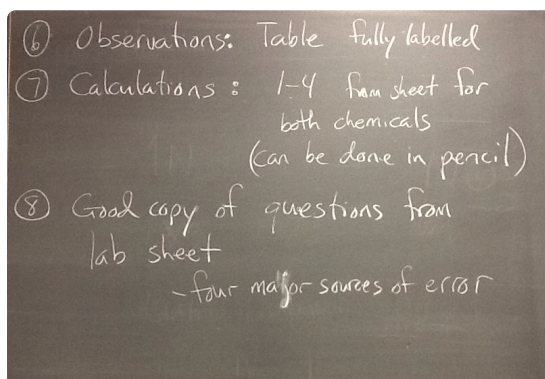
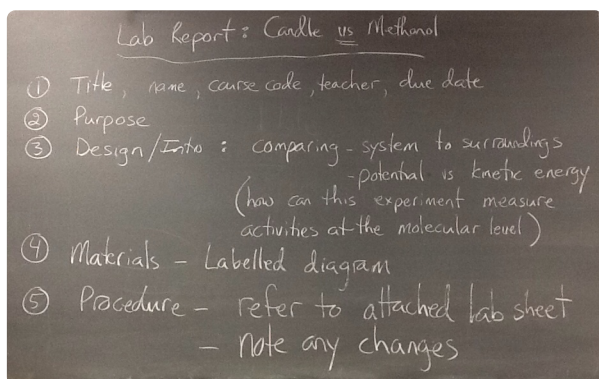
Nov 22

- 1. Rates of reaction $Mg + HCl$

2. Graph of rate vs initial concentration
3. Working on lab or worksheets

Nov 23

Hand in rates lab



Enthalpy of paraffin and methanol lab

Purpose

Observations

Graphs with r value

Determine rate law

Calculate rate constant

Homework - questions on lab sheet and studying for unit test

Nov 26

1. Formal lab write up
2. Topics review for unit test

Nov 27

Work period

Nov 28

Unit test

Nov 29

1. Intro to equilibrium

Nov 30

1. Percent yield is the same as equilibrium
2. Deriving the equilibrium expression
3. Note 7.2
4. Solids and liquids not included, net ionic equations
5. Text questions

Dec 3

1. Lechatelier principle - note 7.3
2. Haber process - 7.4
3. Text questions

Dec 4

1. Solving equilibrium problems
2. Q versus K
3. Note 7.5
4. Worksheet - equilibrium

Dec 5

Work period - worksheet, page 481

Dec 6

Solubility: saturated, unsaturated, supersaturated

Dissociation

Picture of equilibrium crystal dissolving

Notes 7.6

Equilibrium expression and solubility

Dec 7

Common ion effect

Solubility worksheet

Dec 10

Predicting the direction of reactions

Spontaneous - reaction will proceed without help

Non spontaneous - energy needs to be added to the system

Enthalpy change - bonds breaking and reforming

- energy is needed to break a bond therefore energy is released
when bonds form

Entropy - order of the system

Trends

- Exothermic reactions
- Events that increase disorder

As long as the reaction produces free energy the reaction is spontaneous

Free energy - energy available to do work

Textbook questions

Dec 11

Review questions from textbook

Worksheet summary?

Dec 12

Work period

Dec 13

Take up problems that prove to be challenging

Dec 14

Unit test on equilibrium and solubility

Dec 17

Section 8.1 Acids and bases

Theory, ionization, pH, water

Dec 18

Section 8.2 weak acids and bases

Equilibrium K_a and K_b

Dec 19

K_a and K_b problems

Dec 20

Ranking K_a and K_b values

Ranking pK_a and pK_b values

Defining a Salt

Ex. NaCl into ions and the pH is 7

Ex. NH_4Cl into ions and figuring out if solution is acidic or basic

Calculation sample problem

Page 585

Questions page 588

Read 588 and try questions on page 589

Dec 21

Procedure for lab needs to be handed in

Titration video

Read 8.4

CHRISTMAS BREAK

Jan 7

Start lab

Organize the lab, expectations, agenda

Lab journal handout

Making solutions and working on chapter 8 questions

Section 8.4 titration - fully explain how to do sample problem I page 596

questions page 2 page 599

Jan 8

Standardizing the solutions

Section 8.4 - weak acid strong base

Calculating pH before during and at equivalence point

Jan 9-10

Unknowns - beaker A,B,C,D,E,F

Section 8.4 - weak base strong acid

Section 8.5 - defining a buffer, and calculating the pH of a buffer and calculating how the pH of a buffer solution changes when acid or base are added

Jan 11

Calculating unknowns

Titration calculations - 8.4

Jan 14

Example problem of a weak acid strong base

Example of a buffer

Jan 15

Calculating a buffer scenario

Section 8.6 - acid deposition - read and make notes

Jan 16

Chapter 8 test

Need Ka sheet, P/T, scantron and foolscap

Full period

Jan 17

Section 9.1

Defining a redox reaction

Oxidation and reduction

Section 9.2

Assigning oxidation numbers

Jan 18

Balancing Redox reactions

Make sure #3 - replace iodine with nitric acid

and #4 - make sure sulfuric acid has the four oxygens

Jan 21

Chapter 9 test

Jan 22-24

STUDY DAYS

Jan 25-31

EXAMS

Exam breakdown

- Total = 137 marks
- 50 multiple choice
- Matching section
- Naming section
- Calculations
- No essay type