2010
AP Chemistry Syllabus

4 days

Monday

- Introductions
- Hand out publisher's donations
- Questionnaire 1 - Goals
- **LAB: Reaction Products**
- The re-design process
- What happens at the reading
- Warm-ups and Grading
- Teacher Tools – Equation editors
- The AP Audit
- Reaction Products – New and Old
    - How to approach Reaction Products
    - 1994 Reaction Products as a group
    - Homework: 1995-1998
- HW: 2010 AP Test

Tuesday

- Warm-up : Nitroglycerine
- 1996 AP Question 4: Products and Questions
- Alternative schedule of topics
- **LAB: Thermochemistry and Hess' Law**
- **LAB: Molecular weight of a volatile liquid**
- **LAB: Molecular weight by freezing point depression**
- **Demo: Enthalpy of the vaporization of water**
- **LAB: Graham's Law**
- Selected topics –
    - Electron configuration
    - Shielding effect
    - Factors affecting an ideal gas
    - Kinetic theory
        - Heat/Temp/Energy
- Evolution of the AP test
- Questionnaire 2 – How is it going?
- Time to share

Wednesday

- Kinetics
    - Introduction

- Integrated Method
  - **LAB: MM's and Kinetics**
- Differential Method
  - **LAB: Kinetics (Hostage) – make apparatus**
  - **LAB: Sulfur Clock Rx**
  - **LAB: Kinetics (Vonderbrink)**
- WS: The 'proper' method of solving (differential) kinetics
- Mechanisms

Equilibrium
- Dance analogy
- **LAB: Equilibrium-I (qualitative)**
- **LAB: Equilibrium-II (quantitative)**

Acid/Base Equilibrium
- Help Sheet – Why and how
- Selection and sequence of topics
- Titration curve – qualitative
- Titration curve – quantitative
- **LAB: Make a buffer (Hostage)**
- **LAB: Determine Ka (Final exam)**
- **LAB: Ksp by dehydration (start – finish tomorrow)**

Thursday

Solubility equilibrium
- The Problem of the 2
- **LAB: Ksp by dehydration**
- **LAB: Ksp by pH**
- **LAB: Ksp by Serial Dilution**

2010 AP Chemistry Test (Form A)
- The rubric
- The workshop sample papers

Time to Share

Review Question – demonstrate teaching technique

Thermodynamics
- Qualitative
- Quantitative
- **Demo:** $Ba(OH)_2 \cdot 8H_2O + NH_4NO_3$
- 1987 Problem

Electrochemistry
- Galvanic Cell
  - Terminology
  - Voltage (J/C) and Current (C/s)
- Line Notation
  - $Mg(s)|Mg^{2+}(aq)||Al^{3+}(aq)|Al(s)$

Defined by …

E^{o}_{T} and balancd cell reaction

Direction of e^{-} flow
Anode/Cathode designation
Nature of electrodes and ions present

Equations …

EMBED Equation.3
EMBED Equation.3
EMBED Equation.3

When Q = K_{eq} … complete discharge of battery

At equilibrium – components of the two cells have the same free energy, $\Delta G = 0$

Calculate K_{eq} for a Redox Reaction …

EMBED Equation.3
EMBED Equation.3

Electrolysis

Demo: $CuBr_2$ in a U-Tube

Demo: Electroplating