

Chemistry Course Outline

Text: Sarquis, Mickey and Jerry L. *Modern Chemistry*. Orlando: Houghton Mifflin Harcourt, 2012.

Materials: Throughout the course, basic chemistry lab equipment will be used. A scientific calculator is required for the course. Resources provided through the online textbook, as well as Internet resources, interactive websites, and iPad apps are also used. Class materials and vodcasts of class lectures are provided on *NCS Chemistry and Physics*, at <http://tskinnersbec.edublogs.org/>.

Fourth Nine Weeks

1. Chemical Bonds (3 weeks)

A. Objectives

1. Effect of electronegativity on chemical bonding
2. Types of chemical bonds
3. Lewis structures
4. Molecular geometry
5. Intermolecular forces

B. Activities, Assessment, and Materials:

1. Experiment: Types of Bonding
2. Experiment: Paper Chromatography
3. Take Home Lab (thLAB): Freezing Water
4. thLAB: Water Wire
5. Activity: Electric Current
6. Activity: Intermolecular Forces
7. cLAB: 3D Molecules
8. "Lost in the..." research project
9. Homework – chapter 6 end of chapter review and worksheets
10. Science in the News summaries
11. Web posts
12. Test on chapter 6

C. Biblical Integration - It is by God's power that matter holds together, within the atom and within the universe. Colossians 1:16 - 17

2. Chemical Equations and Reactions (2.5 weeks)

A. Objectives

1. Chemical reactions
2. Review chemical formulas and nomenclature
3. Write and balance chemical equations
4. Types of chemical reactions
5. Activity series

B. Activities, Assessment, and Materials:

1. Experiment: Evidence of a Chemical Change
2. thLAB: Balancing Chemical Equations
3. thLAB: Decomposition of Water
4. Experiment: Making and Testing for Gases
5. “Lost in the...” research project
6. Homework – chapter 8 review and worksheets
7. Science In the News summaries
8. Web posts
9. Quiz – Types of chemical reactions
10. Test on chapter 8

C. Biblical Integration – God has established consistent laws to govern all aspects of creation.

3. Stoichiometry (1.5 weeks)

A. Objectives

1. Mole ratio and molar mass
2. Stoichiometric calculations
3. Limiting reactant
4. Percent yield

B. Activities, Assessment, and Materials:

1. Experiment: Percent Yield of Magnesium Oxide
2. Virtual lab (vLAB): Determining the Limiting Reactant
3. Homework – chapter 9 end of chapter review
4. Science In the News summaries
5. Web posts
6. Test on chapter 9

C. Biblical Integration – God’s command for us to do things decently and in order is for our benefit. 1 Cor. 14:30

4. Gases (1 week)

A. Objectives

1. Kinetic molecular theory
2. Pressure and force
3. Dalton’s law of partial pressure
4. Gas laws – Boyle’s law, Charles’ law, Gay-Lussac’s law, combined gas law
5. Diffusion and effusion

B. Activities, Assessment, and Materials:

1. thLAB: Boyle’s Law
2. thLAB: Boiling Water in a Syringe
3. Homework – chapter 11 end of chapter review

4. Science In the News summaries
 5. Web posts
 6. Test on chapters 10a and 11
- C. Biblical Integration – God has established consistent laws to govern all aspects of creation.

4. Selected Topics In Chemistry (1.5 weeks)

A. Objectives

1. States of matter
2. Changes in state
3. Equilibrium vapor pressure
4. Phase diagrams
5. Physical properties of water
6. Solutions
7. Acids and bases
8. pH and indicators

B. Activities, Assessment, and Materials:

1. Experiment: Evaporation and Ink Solvents
2. Experiment: ‘Wet’ Dry Ice
3. Experiment: Freezing Point Depression
4. thLAB: pH Paper
5. Homework – chapter 12 - 16 end of chapter review
6. Science In the News summaries
7. Exam review

- C. Biblical Integration – It is by God’s power that matter holds together, within the atom and within the universe.

Revised 5/23/14