Chemistry Course Syllabus
Room 225
Fall 2015

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Course Description: Chemistry is a laboratory course in which students study the properties of matter. Students who successfully complete this course can expect to know the nature and structure of atoms, the contributions of various scientists to the development of chemistry as a subject, how substances are involved in chemical reactions, and the relationship of chemistry to your everyday life.

Course Standards: The Georgia Performance Standards can be found at www.gerogiastandards.org/science.asp.

SC1. Students will analyze the nature of matter and its classifications.

a. Relate the role of nuclear fusion in producing essentially all elements heavier than helium.
b. Identify substances based on chemical and physical properties.
c. Predict formulas for stable ionic compounds (binary and tertiary) based on balance of charges.
d. Use IUPAC nomenclature for both chemical names and formulas:
- Ionic compounds (Binary and tertiary)
- Covalent compounds (Binary and tertiary)
- Acidic compounds (Binary and tertiary)

SC2. Students will relate how the Law of Conservation of Matter is used to determine chemical composition in compounds and chemical reactions.

a. Identify and balance the following types of chemical equations:
- Synthesis
- Decomposition
- Single Replacement
- Double Replacement
- Combustion

b. Experimentally determine indicators of a chemical reaction specifically precipitation, gas evolution, water production, and changes in energy to the system.
c. Apply concepts of the mole and Avogadro's number to conceptualize and calculate
- Empirical/molecular formulas,
- Mass, moles and molecules relationships,
- Molar volumes of gases.

d. Identify and solve different types of stoichiometry problems, specifically relating mass to moles and mass to mass.
e. Demonstrate the conceptual principle of limiting reactants.
f. Explain the role of equilibrium in chemical reactions.

SC3. Students will use the modern atomic theory to explain the characteristics of atoms.

a. Discriminate between the relative size, charge, and position of protons, neutrons, and electrons in the atom.
b. Use the orbital configuration of neutral atoms to explain its effect on the atom's chemical properties.
c. Explain the relationship of the proton number to the element's identity.
d. Explain the relationship of isotopes to the relative abundance of atoms of a particular element.
e. Compare and contrast types of chemical bonds (i.e. ionic, covalent).
f. Relate light emission and the movement of electrons to element identification.

SC4. Students will use the organization of the Periodic Table to predict properties of elements.

a. Use the Periodic Table to predict periodic trends including atomic radii, ionic radii, ionization energy, and electronegativity of various elements.
b. Compare and contrast trends in the chemical and physical properties of elements and their placement on the Periodic Table.

SC5. Students will understand that the rate at which a chemical reaction occurs can be affected by changing concentration, temperature, or pressure and the addition of a catalyst.

a. Demonstrate the effects of changing concentration, temperature, and pressure on chemical reactions.
b. Investigate the effects of a catalyst on chemical reactions and apply it to everyday examples.
c. Explain the role of activation energy and degree of randomness in chemical reactions.

SC6. Students will understand the effects of the motion of atoms and molecules in chemical and physical processes.

a. Compare and contrast atomic/molecular motion in solids, liquids, gases, and plasmas.
b. Collect data and calculate the amount of heat given off or taken in by chemical or physical processes.
c. Analyzing (both conceptually and quantitatively) flow of energy during change of state (phase).

SC7. Students will characterize the properties that describe solutions and the nature of acids and bases.

a. Explain the process of dissolving in terms of solute/solvent interactions:
- Observe factors that effect the rate at which a solute dissolves in a specific solvent,
- Express concentrations as molarities,
- Prepare and properly label solutions of specified molar concentration,
- Relate molality to colligative properties.

b. Compare, contrast, and evaluate the nature of acids and bases:
- Arrhenius, Bronsted-Lowry Acid/Bases
- Strong vs. weak acids/bases in terms of percent dissociation
- Hydronium ion concentration
- pH
- Acid-Base neutralization

Suggested Supply List:

- One notebook or a three-ring binder with paper.
- Pens or Pencils
- Agenda
- Calculator (Preferably a scientific calculator)
- One composition notebook for lab (NOT a spiral bound notebook)

Textbook: (provided)
Chemistry by Wilbraham, Staley, Matta, and Waterman (Prentice Hall)

Units of Study: (subject to change)

1st Semester

1. Lab Safety/Matter
2. Measurement
3. Atomic Structure/Electrons
4. Periodic Table
5. Bonding
6. Nomenclature
7. The Mole/Stoichiometry
8. States of Matter
9. Gas Laws
10. Solutions
11. Thermochemistry
12. Acids and Bases

Grading Scale:

Tests = 30%
Homework=10%
Classwork=15%
Labs &Projects = 25%
Final Exam = 20%

Class Rules:

1. Be at school and on time.
2. Be prepared for class.
3. Be respectful.
4. Follow safety rules.
5. Follow guidelines in student handbook.

Classroom Policies and Procedures

A. Class Room Behavior/Attire:

All Students are required to conform to the Henry Public Schools and Henry County High School guidelines for discipline and Dress Code. The following activities are unacceptable behavior for the class and will not be tolerated:

- ❖ USE of unapproved electronic devices during class time!
- ❖ Sleeping, Playing Cards, Braiding/Combing Hair (any form of grooming)
- ❖ Private Conversation unrelated to subject matter
- ❖ Gum Chewing, Eating or Drinking of any kind
- ❖ Fighting or any other antagonizing behavior
- ❖ Amorous or Flirtatious behavior.

B. Absences:

Students will have ***three (3)*** days to make up any missed assignments for an ***excused*** absence. A grade of zero will be assessed for assignments missed due to unexcused absences (i.e. class cutting).

C. Tardiness:

Students must have a valid hall pass when arriving to class after the bell sounds. If the student does not have a valid hall pass, make-up assignments will not be given.

Tardy/Discipline Policy

First Violation: Verbal warning
Second Violation: Parent phone call or e-mail
Third Violation: Detention (If the student fails to attend detention, then a referral will be written resulting
Fourth Violation: Administrative Referral

Laboratory Safety Contract

To ensure a safe chemistry classroom, a list of rules have been developed and provided to you in the safety contract. These rules must be followed at all times. Safety in the laboratory is our foremost *requirement*. Chemicals can be very dangerous if handled incorrectly! All students will be required to complete a lab safety contract that must be shared and signed by their parent or guardian. Students will be required to wear protective equipment at all times while handling chemicals. Horseplay will absolutely not be tolerated during laboratory experiments. The school will provide safety equipment when laboratory is conducted.

If you have any questions or comments regarding the syllabus, the class, etc. feel free to contact me by e-mail. I will get back to you as soon as I can.

Student and Parent Information

Please Return the Entire Page!!

Please provide the following information. Also, please read the ENTIRE syllabus and sign below stating that you read everything.

Student Name: _____ **Grade Level:** _____

HEALTH INFORMATION: Please list any allergies, medications, or special needs (including eyeglasses, contacts, color blindness, etc.) of the student. Write "NONE" if applicable.

Parent/Guardian Names: _____

Address: _____

Phone Number: _____

*****PLEASE INCLUDE AN E-MAIL ADDRESS BECAUSE THIS IS THE QUICKEST AND MOST RELIABLE FORM OF COMMUNICATION!!!**

*****Email Address:** _____

I HAVE READ AND UNDERSTAND THE INFORMATION PROVIDED IN THE SYLLABUS.

Student Signature: _____ **Date:** _____

Parent Signature: _____ **Date:** _____

*****NOTE TO PARENTS: Please check your son's/daughter's progress on Infinite Campus.**