Honors Chemistry Course Outline 2016-2017
Mr. Mahar

Course Goals:

1) To prepare students of college ability for further study in chemistry and at the same time to present material of use in daily life.
2) To encourage the spirit of scientific investigation and with it the attitudes of accuracy in thought and work.

Organization:
The course is organized into nine units according to AP Chemistry Essential Standards.

- **Unit 1 – Matter and Measurement**
  SI System, Significant Figures, Accuracy & Precision
- **Unit 2 – Atomic Structure (HS PS1-1)**
  Atoms – The building blocks of Matter; Nuclear Chemistry
- **Unit 3 –Electrons and Periodic Behavior (HS PS1-2)**
  Arrangement of Electrons in Atoms, The Periodic Law, Periodic Trends
- **Unit 4 –Bonding and Molecular Structure (HS PS1-3)**
  Chemical bonding; Structure of Covalent Molecules, Salts, and Metals
- **Unit 5 – Conservation of Matter and Stoichiometry (HS PS1-7)**
  Chemical Formulas and Chemical Compounds, Chemical Equations and Reactions, Stoichiometry
- **Unit 6 – Gases:**
  Physical Characteristics of Gases, Gas Laws, Molecular Composition of Gases
- **Unit 7 – Solids, Liquids and Solutions:**
  Liquids and Solids, Properties of Solutions and Solution Concentration, Acids and Bases
- **Unit 8 – Kinetics and Thermodynamics (HS PS1-4 and PS1-5)**
  Calculations of Latent Heat and Specific Heat, Reaction Energy and Reaction Kinetics
- **Unit 9 – Equilibrium (HS PS1-6):**
  Reversible Reactions, Determination of Equilibrium Expression, Calculation of Equilibrium Constant
- **Unit 10 – Selected Topics (HS PS1-8)**
  Topics include Acid-Base Titration and pH; Nuclear Chemistry

Performance Indicators for Graduation Standards (Next Generation Science Standards)

- Students will use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. **(HS PS1-1)**

- Students will construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. **(HS PS1-2)**

- Students will plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. **(HS PS1-3)**

- Students will develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. **(HS PS1-4)**

- Students will apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs. **(HS PS1-5)**

- Students will refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium. (**HS PS 1-6)**

- Students will use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction**. (HS PS 1-7)**

- Students will develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay. **(HS PS1-8)**

Course Textbook: Pearson Chemistry

Grading: Student achievement of the standards will be assessed through summative assessments and CER's (Claim, Evidence, Reasoning).

Course grades will be assigned according to OHS's standard grading practice:

- 93 - 100 = A
- 85 - 92 =B
- 76 - 84 = C
- 70 - 75 = D
- 69 and Below = F
- **Assignments**: All assignments are announced on google classroom (classroom code 6v17ms) Assignments are expected to be completed by the following class. Homework will be reviewed by the instructor on the day it is due. Homework and other course work such as worksheets, practice problems and informal lab analysis will be assembled into a comprehensive homework packet and reviewed at the end of each unit.

Attendance: It is your responsibility to find out what assignments have been missed during an absence and make plans with me for getting caught up on missed summative assessments or formal lab reports. Homework, quizzes and activities must be included in your notebook, all work will be posted on the course website.

Online Resources:. All assignments and class resources will be posted on google classroom. Most of the documents are in Adobe or Word format. There are also links to simulations and internet resources.

https://classroom.google.com/u/0/c/NzE5MzI5OTgwM1pa

Targeted Learning: Monday through Friday, students will have an opportunity to connect with teachers during the 35 minute targeted learning block. However, feel free to communicate by email if you have questions outside of this time: jmahar@rsu13.org

_____ _____

Student Signature *Date*

_____ _____

Parent Signature *Date*