**HOPE HIGH SCHOOL COURSE SYLLABUS**

**2016-2017**

**Dr A Castro**

**Science teacher**

**Hope High School**

**Room 320**

**Tutoring hours Thursdays from 3 to 4 pm**

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**General Chemistry Syllabus for the 2016-2017 academic school years**

**Course description:** Chemistry is the science that investigates and explains the structure and property of matter.

**Text:**

*General Chemistry:* Concepts and Applications by Macmillan /McGraw-Hill , and ancillaries

**Course Learning Goals:**

* Students are prepared to be critical and independent thinkers as well as team members who are able to function in a challenging scientific and academic environment.
* Students will be prepared to participate in a laboratory environment, prepare materials and equipment, make relevant observations, collect data, analyze and form conclusions from the collected data, and prepare formal reports of their experiments and research.

**Course Procedures:**

Students are expected to attend class daily, equipped with the required material. The Chemistry class meets for 90 minutes every day.

* 1. This course will involve a variety of learning experiences

**Daily Class work:** This will consist of:

* + - **Classroom participation**, activities and notes.
      * Each of these is specifically designed to help prepare you for success on the unit assessment.
  1. **Laboratory Reports:** These may be written or oral, but must demonstrate your understanding of the process and nature of scientific inquiry and of the conclusions which can be drawn from the experiment, as well as the limitations of the experiment.
     + Each of these experiences is specifically designed to help prepare you for success on the unit assessment
  2. **Chemistry Notebook**: is a major component of this class. The chemistry notebook helps students develop discipline, to be organized, and helps student prepare for unit assessments
  3. **Homework:**  as stated above, students are expected to put a minimum of 45-60 minutes per day outside of class. The problems assigned are reviewed as each topic is covered for each unit in this curriculum.
  4. **Unit Assessments:**
     + **Quizzes** (50 points each) 25 total questions consisting of multiple choice and constructed response questions: that measure application-level cognitive skills as well as content knowledge.
     + **End of Unit test** (100 points each) 25 total questions consisting of multiple choice and constructed response questions: that measure application-level cognitive skills as well as content knowledge.
  5. **Midterm Exam (100 Points)** a culmination of quarters 1 & 2 content. 25 total question consisting of multiple choice question and constructed response questions: that measure the application-level cognitive skills as well as content knowledge.
  6. **Final Exam (100 Points)** a culmination content from all four quarters. 25 total question consisting of multiple choice question and constructed response questions: that measure the application-level cognitive skills as well as content knowledge.
  7. **Attendance:** Students will abide by school and/ or district’s official policy. Students will not be excused from assignments missed during an absence and is allowed one (1) week to make-up any missed assignments
  8. **Late Work:** All assignments will be due at the beginning of class unless otherwise indicated. Assignments turned after the due date will be penalized (one grade per day). Assignment more than one week late will not be accepted without prior approval for emergency situations.
  9. **The following aspects of the course are designed to help you succeed in passing this class. PLEASE TAKE FULL ADVANTAGE:**
* One on one tutoring with on Mondays after school or by appointment.
* Assistance with study habits….flashcards, problem solving skills, etc.
* Lab reports can be submitted three days before due date for editing or corrections.
* All test and quizzes will be posted one week prior to test date

**Grading Policy:**

**Quarterly grades are calculated on the following:**

Homework/ daily agendas 10%

Labs / Projects 30%

Assignments 30%

Unit Test 30%

**Course Content:**

Lectures concentrate upon the main topics and are assisted by the electronic material available by the publisher, i.e., PowerPointTM. Fundamental principles developed in this course:

**Quarter 1 (September to November)**

**Unit Days Unit Title and Essential Questions Notes**

1.1 14 **Chemical and Physical Properties**

* How do substances have different physical and chemical properties than their component elements?
* How can physical and chemical properties be used to identify an unknown substance?
* How do the physical and chemical properties of a substance determine the amount of energy needed for a physical or chemical change?
* When examining the density of a substance, why is temperature an important factor to consider?
* **Lab Activity:** Chromatography lab
* **Lab Activity:** Density lab
* Unit 1.1 quiz

1.2 10 **Atomic Structure and Theory**

* How can the same element have two different masses or two different charges?
* How did the advances in technology allow scientists to revise the atomic theory?
* How can the structure of an atom be determined from the periodic table?
* **Lab Activity: Timeline**
* Unit 2.1 Quiz

1.3 10 **Nuclear Chemistry**

* How can the type of decay for an isotope be determined?
* How can use of an isotope’s half-life determine the age of an artifact?
* Why is fission considered the best way to produce nuclear energy?
* **Lab Activity:** Date a rock lab
* **Lab Activity:** Carbon 14 half-life lab
* Unit 1.3 Quiz

**Quarter 1 End of Unit test**

**Quarter 2 (November to January )**

**Unit Days Unit Title and Essential Questions Notes**

2.1 10 **The Periodic Table**

* How can the periodic table be used to predict chemical and physical properties of a given element?
* How did Mendeleev’s periodic table leave room for the discovery of new elements?
* What are the similarities and differences between an element from Group 1 and an element from Group 7?
* **Lab Activity:** Favorite Element brochure
* Unit 2.1 quiz

2.2 6 **Periodic Trends**

* Why do periodic trends vary both horizontally and vertically?
* How can knowledge of periodic trends be used to identify unknown elements or place new elements on the periodic table?
* **Lab Activity:** Periodic trends Lab (straw lab)
  + - * Atomic radius
      * Electronegativity
* Unit 2.2 quiz

2.3 12 **Electron Configuration**

* What is the relationship between an element’s electron configuration and its oxidation state?
* Based on the electron configuration of two given elements, compare the energy needed to remove or gain electrons.
* **Lab Activity:** Flame test lab
* Unit 2.3 quiz

2.4 16 **Chemical Bonding**

* How do intermolecular forces determine the physical and chemical properties of compounds?
* How does the octet rule enable us to predict the type of bonds occurring between two different elements?
* How do electron configurations confirm the type of bond that forms in a molecule?
* Given a molecule, such as water, how do electron configurations and the octet rule confirm the molecular structure and the intermolecular forces between molecules?
* How is the periodic table used as a tool to help determine chemical formulas?
* **Lab Activity:** Hydrate Lab
* **Lab Activity:** Distinguishing Ionic and Covalent Compounds
* **Lab Activity** Distinguishing Ionic and Covalent unknowns
* Unit 2.4 quiz

**Quarter 2 End of Unit test**

**Midterm Exam**

**Quarter 3 (January to April)**

**Unit Days Unit Title and Essential Questions Notes**

3.1 10 **Writing Simple Chemical Equations**

* How can you determine if a chemical equation is balanced or not?
* How does a balanced chemical reaction illustrate that matter is conserved?
* How does increasing one of the reactants in a chemical equation affect the amount of substances produced?
* What information is needed in order to predict the products of a chemical reaction?
* **Lab Activity:** Single displacement Lab
* Unit 3.1 Quiz

3.2 11 **Stoichiometry of Chemical Reactions**

* How can Stoichiometry be used to determine the amount of reactant needed given a specified amount of product?
* Why are experimental and theoretical yields from a chemical reaction seldom equal?
* Why do chemists use the concept of moles to represent chemical quantities?
* **Lab Activity:** Double Displacement Lab
* Unit 3**.**2 quiz

3.3 9 **Chemical Reactions**

* How can the products and nature of the products be determined when given specific reactants?
* If two soluble substances are combined and produce a precipitate, how can the identity of that substance be determined?
* Why will certain substances react and others will not?
* What information is needed in order to predict the products of a chemical reaction?
* **Lab Activity**: Chemistry Common Unit Lab
* Unit 3.3 Quiz

**Quarter 1 End of Unit test**

**Quarter 4 (April to June)**

**Unit Days Unit Title and Essential Questions Notes**

* 1. 13 **Gas Laws**
* How do changes in pressure or temperature affect the volume of a gas?
* How can Graham’s Law of Effusion explain how perfume moves through a room?
* How does kinetic molecular theory explains the behavior of gases?
* How do the number of molecules, the temperature of the molecules, and the size of the container affect the pressure of a gas?
* **Lab Activity:** Lab 13.1 Lab Manual
* **Lab Activity:** Lab 13.2 Lab Manual
* Unit 4.1 Quiz

4.2 19 **Energy and Chemical Reactions**

* How does energy flow through a chemical reaction?
* How is a calorimeter used to collect data about energy flow in a given chemical reaction?
* Why would energy flow, ionization energies, and electron configurations be necessary to understanding the behaviors of substances during chemical reactions?
* How can the law of conservation of mass be validated through the study of earth changes?
* How do physical and chemical processes alter the earth’s crust?
* **Lab Activity:** RITES Endothermic/ Exothermic Lab
* Unit 4.2 quiz

4.3 12 **Chemistry and the Changing Earth**

* Given a rock sample, what conditions were necessary for the formation of this sample?
* Given a rock sample, how can the rock be changed into another type of rock?
* How is energy involved in crustal plate movement?
* **Lab Activity:** RITES Rock lab Activity
* Unit 4.3 Quiz

**Quarter 4 End of Unit test**

**Final Exam**