CHEMISTRY Syllabus

INSTRUCTOR: Mahua Chakraborty

2022-2023

Goals: The Chemistry course is designed like an honors chemistry class to give general instruction to chemical concepts and applying these concepts. Students perform labs after certain topics to get a clear understanding of difficult concepts covered as theory. This helps clear up many chemical concepts and enhance thinking skills.

This course prepares students for college Chemistry, and they feel confident as they pursue Chemistry at a college level.

Textbook: CHEMISTRY by Wilbraham, Staley, Matta, Waterman. Please bring the textbooks daily to the classroom except on testing days.

- Content: Main Topics that will be covered include

1st nine weeks:

•**Scientific measurement**: Students will learn units of measurements, solving conversion problems. Additional work sheets will be provided to students to reinforce the content knowledge.

- **Atomic Structure and Electrons in Atom:** Students will learn about defining the Atom, structure of Nuclear Atom, Distinguishing among atoms.
- Students will learn electron arrangement in Atom, Atomic emission spectra and quantum mechanical model.
- **The Periodic Table:** Students will learn to organize the elements, classifying the Elements and Periodic Trends.
- **Ionic and metallic Bonding:** Students will learn about the formation of ions, ionic bonds and ionic compounds and bonding in metals.

2nd nine weeks

- **Covalent Bonding:** Students will learn about molecular compounds, nature of covalent bonds, bonding theories, polar bonds and molecules.
- **Chemical names and Formulas**: Students will learn about naming ions, naming and writing formulas for ionic compounds, naming and writing formulas for molecular compounds, the laws governing how compounds are formed.
- **Chemical Quantities**: Students will learn about The Mole, Mole-Mass, Mole-Volume relationships, percent composition and chemical formulas.
- **Chemical Reactions**: Students will learn how to describe chemical reactions, types of chemical reactions, Reactions in Aqueous solution.

3rd nine weeks

- **Stoichiometry:** Students will learn about the arithmetic of equations, the chemical calculations, Limiting reagents and percent yield.
- **Behavior of gases**: Students will learn about behavior of gases, the gas law, the Ideal gas and gas mixtures and movements.
- **Solutions**: Students will learn about the properties of solutions, concentrations of solutions, colligative properties and calculations involving colligative properties

4th nine weeks

- **Thermochemistry:** Students will learn about energy flow, measuring and expressing

enthalpy changes, calculating heat in changes of state, Hess's law, and calculating heats of reactions.

• **Reaction Rates and Equilibrium**: Students will learn about rates of reactions, the progress of Chemical reactions, reversible reactions and equilibriums, solubility equilibrium, Le Chatelier's principle, free energy and entropy.

- **Acids, Bases and Salts:** Students will learn about Acid Base Theories, hydrogen ions and acidity, strengths of acids and bases, neutralization reactions, salts in solution.

Your success in on this course will directly reflect the amount of time and effort you put into it. Here are some suggestions that may help you:

1. Come to class daily
2. Participate actively and ask questions as soon as you need help.
3. Attending help labs as and when needed with Mrs. Chakraborty. The timetable for help labs for first-year student, juniors and seniors will be pasted on the door of classroom 304.
4. Keep notes about demonstrations and examples presented in the class. Keep up with your work.
5. Be open to a variety of learning styles and activities.
6. Each assignment must be turned in on time. There will be a late grade if turned later than the due date. It will be students' responsibility to check on Power Teacher and turn in all assignments with "0" grade.

Materials: Please bring the following to the class daily:

- Blue/Black pen, #2 pencil, and a ruler
- Scientific calculator/ TI 84 (Very important and bring to class daily)
- Flash drive
- A notebook for taking note. NO LOOSE SHEETS OF PAPER. At the beginning of the
- year purchase 2-3 composition notebooks for taking down notes in class.
- Textbooks. Chemistry lab notebook when indicated. Workbook when asked. **Textbooks must be brought to class daily along with a binded notebook for taking down notes.**
- Class Prerequisites: Since Chemistry involves a lot of mathematics it is preferred that you are currently enrolled in Algebra II. However, I would like to know if you are planning on taking Chemistry with Geometry. Please come and talk to me, and I can give you some helpful tips.

Tests:
You will have tests /quizzes on Mon or Thurs. **Class Behavior: KEY word is RESPECT**

Students are expected to speak with respect to the teacher and their fellow students.
No eating, drinking, or chewing gum in the class. Before entering the class, make sure you trash your drink or spit out your chewing gum. Only a bottle of water is allowed in the class as well as the lab.

Students are expected NOT to bring any games, throw things, or tamper with equipment in the classroom or the lab. Students are expected to sit in their assigned seats and PAY FULL ATTENTION in the class.

Homework: Homework will be assigned frequently. Chemistry requires repetition to master difficult concepts and develop necessary problem-solving skills.

It should not take you more than 30-40 minutes. HW will be checked before class starts.
For problems make sure you show the calculations. **HW should not be done in red ink.**

Late HW is accepted with a late grade. Avoid late submissions as this can hurt your grades tremendously

Grading: Students will be graded on quizzes, exams, homework, and lab work. Please go online to check the grading policy. **There will be two projects in the year.** You will be graded on projects and will carry the same points as labs.

Extra Assistance: Students can come to me during the help labs designated at 12.30 pm. Days will be posted online Canvas.

Absences: If you are absent, be sure to have a classmate pick up all the papers and assignments for you.
If you are sick for more than one day, have a classmate or a parent bring assignments to you. Labs will be preannounced**. Lab absences will result in a zero grade unless the student is seriously sick or an emergency in the family.** This excuse must be followed with an excuse note from the doctor's office. Each day in chemistry is dependent on understanding the previous day's work. Daily attendance is essential. Preannounced tests and quizzes must be made up on the day that the student returns. All make-up (tests, quizzes, labs must be completed as soon as possible)