**Chemistry**



Instructor: **Mr. Cooper**

E-mail: [rcooper@freeport.k12.pa.us](mailto:rcooper@freeport.k12.pa.us) Phone: ***724-295-5143 ext. 1553*** Room:***53*** Course Number: ***104***

**Course Description**

Chemistry is the most central of sciences and studies the composition, structure, and properties of matter. It is involved with natural and physical processes occurring biological, on the Earth, in the oceans, and throughout the atmosphere. The chemical industry provides material to feed, clothe, and house mankind, drugs to combat disease, and processes to provide energy for societal needs. Chemistry is playing an ever-increasing role in our society, and this class will give you and introduction to the role of Chemistry. The topics covered include scientific methodology, SI and English units of measurements, matter and energy, atomic structure, properties of the periodic table, electron configurations, chemical bonding, chemical formulas, chemical equations, stoichiometry, chemical reactions, phases of matter, gas laws, and solutions.

**Classroom Materials**

It is the students’ responsibility to come prepared to each class period with all required classroom materials. Those materials include the following:

1. Three-ring notebook (preferably 2-3 inch) in order to store all classroom materials.
2. Writing utensils including pencils, pens, and highlighters. Be aware, certain labs may require you *ONLY* use a pencil!
3. Colored pencils for various lab activities and projects (provided by instructor).
4. Scientific calculator (capable of log, trig, and exponential functions)

**Classroom Rules**

When in the classroom, it is important students act as young, responsible adults. This can be achieved by following some basic classroom rules including the following:

* **RESPECT** – One of the most important rules in the classroom is respect. You are to respect your fellow classmates and the instructor at *ALL* times.
* **BE PREPARED** – Come to class prepared each and every day with a writing utensil, homework assignments, and your binder. Failure to do so will result in a 5 point deduction from the final participation grade at the end of the 9 weeks.
* **RAISE YOUR HAND** – If you wish to speak during class time, raise your hand and the instructor will get to your comment/question. Do not interrupt the instructor or another student while they are talking.
* **DO NOT LEAVE THE ROOM** – Once you are in the classroom, you are not to leave unless you have a designated pass from the office or another teacher, in which case you will sign out on the sheet. Please use the restroom, go to your locker, get a drink, etc. before arriving to class. If a medical condition or emergency occurs, exceptions will be made.
* **NO FOOD OR DRINK** – Properly dispose of any food or drinks prior to entering the classroom. Bottled water and gum will be permitted during *CLASS* time unless they become a problem. No food or drinks are permitted in the *LAB* at any time.
* **CHEMISTRY ONLY** – Since this is a Chemistry class, it is unacceptable to work on other subjects during designated class time unless given permission from the instructor. Cell phones are only permitted when given permission.

**Tardiness**

All students need to be seated in the classroom by the time of the bell. Any student not doing so will be considered late. Students having a late pass will be excused by handing the pass to the instructor and quietly sitting in their assigned seat. Students without a late pass will be considered *TARDY*:

1. 1st tardy – Verbal warning
2. 2nd tardy – 5 points will be deducted from the final participation grade at the end of the 9 weeks
3. 3rd tardy (and more) – Additional 5 points will be deducted from the final participation grade at the end of the 9 weeks; discipline referral will be sent to the office for detention to be assigned

**Attendance**

In order to take the maximum amount of information away from this or any class, it is imperative to attend class every day. If a student is absent, *IT IS THE SOLE RESPONSIBILITY OF THE STUDENT* to retrieve any missed work, notes, or handouts. Extra handouts and worksheets will be in a separate bin on the side counter. The student who was absent can see the instructor if a lab, quiz, or test is needed for make-up. If work was due on the day of an absence, it is due the day of return. If work was completed during the day of an absence, the general rule is: 1 DAY ABSENT = 1 DAY TO MAKE IT UP!

**Late Work**

All assignments are due at the beginning of the class period. Any work not turned in at that time will be counted as late work. Students will be given plenty of time to complete all assignments, therefore, I expect all work to be handed in on time. Late work will be given a 50% grade reduction. Failure to turn in any work by the end of a unit will result in a “0” (zero) for the assignment.

**Tutoring**

I am willing to assist any student who desires additional help with a specific topic throughout this course. Schedule an appointment with me and we will work out any problems you may have. I am available most days either before school, after school, or during my planning period. Tell me when you are coming, and I will write you a pass for that time.

**Grading System**

The following grade school has been implemented by the Freeport Area School District and will be used throughout this course:

91% - 100% **A**

81% - 90% **B**

70% - 80% **C**

60% - 69% **D**

0% - 59% **F**

Any decimal place at 0.50 or higher will be rounded up during the entirety of this course. The following classroom items will be graded throughout this semester. Students are responsible for making sure they turn in and complete all necessary work:

* TESTS: There will be one test at the conclusion of every unit we cover throughout the semester.
* QUIZZES: Announced and unannounced (pop-quizzes) will be given throughout each unit of study.
* LAB REPORTS: We will complete several labs per unit of study throughout the course.
* PROBLEM SETS: Problem sets will be assigned for each unit of study. Work must always be shown for credit.
* HOMEWORK: Homework will be given on a weekly basis and a due date will be assigned at that time.
* IN-CLASS ACTIVITIES: We will do a variety of in-class activities independently and in small groups.
* PARTICIPATION: Your participation and attentiveness in the classroom will be measured and graded.
* FINAL EXAM: Your final exam will be a cumulative exam at the end of the year covering all units.

**Integrity**

It goes without saying that all students should act with the utmost integrity at all times throughout the course of the semester. Cheating will not be tolerated by the instructor or the Freeport Area School District. Students found cheating, copying, or plagiarizing in any way will receive a “0” (zero) for the assignment, a discipline referral will be sent to the office for detention to be assigned, and parents will be notified.

**Discipline**

All disciplinary problems are unacceptable by the instructor within the classroom. Penalties for such problems include: reprimand/warning, 5 points off participation total per offense, discipline referral sent to the office for detention to be assigned, phone call to parents, and parent-teacher conference. For items not covered in this syllabus, please refer to the student handbook, which will be enforced at all times during this course.

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By signing below, I verify that I have read the Chemistry course syllabus and fully understand the details, rules, and expectations the instructor has implemented for this course.

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent/Guardian Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Printed Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Parent/Guardian Printed Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Course Outline**

**Unit 1: Introduction to Chemistry**

1. Matter and Change
   1. Properties of Matter
   2. Elements
2. Measurements and Calculations
   1. Scientific Method
   2. Units of Measurement
   3. Dimensional Analysis
   4. Significant Figures

**Unit 2: The Atom**

1. Building Blocks of Matter
   1. Atomic Structure
   2. Counting Atoms
2. Arrangement of Electrons
   1. New Atomic Model
   2. Quantum Model of an Atom
   3. Electron Configurations
3. The Periodic Law
   1. History of the Periodic Table
   2. Electron Configuration and the Table

**Unit 3: Bonding and Formulas**

1. Chemical Bonding
   1. Covalent Bonding and Molecular Compounds
   2. Ionic Bonding and Ionic Compounds
   3. Metallic Bonding
   4. Molecular Geometry
2. Chemical Formulas
   1. Chemical Names and Formulas
   2. Oxidation Numbers
   3. Using Chemical Formulas
   4. Determining Chemical Formulas

**Unit 4: Reactions and Stoichiometry**

1. Chemical Equations
   1. Balancing Equations
2. Chemical Reactions
   1. Describing Chemical Reactions
   2. Types of Chemical Reactions
   3. Activity Series of the Elements
3. Stoichiometry
   1. Ideal Stoichiometric Calculations
   2. Limiting Reactants
   3. Percentage Yield

**Unit 5: Matter and Gases**

1. States of Matter
   1. Kinetic-Molecular Theory
   2. Liquids and Solids
   3. Changes of State
2. Gases
   1. Force and Pressure
   2. The Gas Laws
   3. Gas Volumes and the Ideal Gas Law
   4. Diffusion and Effusion

**Unit 6: Solutions**

1. Properties of Solutions
   1. Types of Mixtures
2. The Solution Process
   1. Solubility
   2. Solute-Solvent Interactions
   3. Enthalpies of Solution
3. Solution Concentration
   1. Molarity
   2. Molality

**Unit 7: Acids and Bases**

1. Properties of Acids and Bases
   1. Acid Nomenclature
   2. Common Acids and Bases
2. Acid-Base Theories and Reactions
   1. Brønsted-Lowry and Lewis
   2. Conjugate Acids and Bases
3. pH and Acid-Base Titration
   1. Aqueous Solutions
   2. The pH Scale
   3. Determining pH and Titrations

**\*Unit 8: Thermochemistry and Equilibrium**

1. Reaction Energy
   1. Thermochemistry
   2. Driving Force of Reactions
2. Chemical Equilibrium
   1. Equilibria of Acids, Bases, and Salts
   2. Solubility Equilibrium
3. Oxidation-Reduction Reactions
   1. Oxidation and Reduction
   2. Balancing Redox Equations
   3. Oxidizing and Reducing Agents

All course information can be found on Freeport’s Schoology Website: [www.fasd.schoology.com](http://www.fasd.schoology.com) ACCESS CODE: \_\_\_\_\_\_\_\_\_\_\_\_

Course outline and schedule are subject to change at the instructor’s discretion.

\*If time permits at the end of the school year