PISCATAWAY TOWNSHIP SCHOOLS

Course Syllabus

Course Title: Academic Chemistry

Textbook: **Prentice Hall *Chemistry***

Teacher: Daniel Taylor

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Extra help Available By Appointment

Course Description: **Academic Chemistry** is a 6 credit, full year college preparatory course for students in grades 10, 11 and 12. This is a lecture and lab course, which meets 6 blocks per 7 day cycle. Academic Chemistry consists of a basic introductory program that will lead to a foundation understanding of the fundamental principles and applications of chemistry. Included in this program is a consideration of: chemical safety, measurements in chemistry, matter and its changes, atomic structure, the Periodic Law, chemical bonds, chemical mathematics, types of reactions, stoichiometry, gas laws, solutions, equilibrium, ionization theory and acid-base reactions.

During the course of study, students will learn and develop the following skills: organization, use of content specific vocabulary, safe lab procedures, lab report preparation and the ability to understand and further investigate the basics of chemistry.

Course Schedule: Scope and Sequence

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| **Approximate Time Frame** | **Topic** |
| **First Semester** | |
| Marking Period One  *September through November* | **Topics**: Lab Safety, Scientific Method, Measurement, Matter & Energy and The Atom.  **Specific Content**:  Lab Safety rules & equipment  Definition of Chemistry  The Scientific Method and Experiments  Measurements and Uncertainty  SI Units and Conversions  Scientific Notation  Conservation and Classification of Matter  Elements, Mixtures and Compounds  Chemical Reactions  Define the Atom  Structure and Models of the Atom  Electron Arrangement  Orbital Notation |

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| Marking Period Two  *November through January* | **Topics**: Periodicity, Ionic Bonding, Covalent Bonding, Chemical Compound Naming.  **Specific Content**:  Organizing the Elements  Classifying the Elements  Radius, Electronegativity and Ionization Energy and Periodic Trends  Ions, Ionic Bonds and their Properties  Bonding in Metals  Molecular Compounds and Covalent Bonds  Lewis Dot Diagram and VSEPR Theory  Bond Polarity  Naming and Formulas of Ionic Compounds  Naming and Formulas of Molecular Compounds |
| **Second Semester** | |
| Marking Period Three  *February through April* | **Topics**: Chemical Quantities, Chemical Reactions, Stoichiometry, States of Matter.  **Specific Content**:  Chemical Quantities and the Mole/Mass Relationship  Percent Composition  Empirical Formula  Describing Chemical Reactions  Types of Chemical Reactions  Balancing Reaction Equations  Reaction Stoichiometry  Limiting Reactant and Percent Yield  Nature of Gases, Liquids and Solids  Changes of State |
| Marking Period Four  *April through June* | **Topics**: Gas Laws, Aqueous Systems, Solutions, Acids and Bases.  **Specific Content**:  Theories, Behavior and Properties of Gases  The Gas Laws  Ideal Gases  Properties of Solutions  Concentrations of Solutions  Colligative Properties  Net Ionic Equations  Acid/Base Definitions and Theories  Chemical and Physical Properties Acid/Base  Ions and the pH scale  Neutralization and Salts |

**Materials Required**:

* A three ring binder
* A variety of pencils and pens
* Textbook
* Scientific calculator

**Classroom, Laboratory Procedures**:

* Wear safety goggles and apron at all times in the lab
* Appropriate personal apparel for lab-work
* Read procedures and know what you will do before the lab activity
* Know safety equipment locations and emergency procedures
* Report all accidents and risks to instructor immediately
* Follow lab directions and do not perform any unauthorized lab activity
* Stay alert with controlled behavior at all times in the lab
* Food and beverages are not allowed
* Treat all chemicals as hazardous and use caution with handling chemicals
* Exercise special care when using burners, heat and electrical devices
* Maintain your lab station in good order and clean
* Wash your hands with soap and water after every lab period
* Observe and adhere to all PHS Rules and Regulations as noted in Handbook
* Follow any specific instructions and procedures of your instructor

**Grading Distribution for each marking period:**

* Tests: 40 percent of the marking period (Projects will be assessed as a test grade)
* Laboratory reports and Projects: 20 percent of the marking period grade (approximately eight will be assigned every marking period)
* Quizzes: 20 percent of the marking period grade (approximately three will be administered every marking period)
* In Class Assignments: 10 percent of the marking period grade
* Homework: 10 percent of the marking period grade (a variable number will be administered and approximately ten will be collected and graded)