PISCATAWAY TOWNSHIP SCHOOLS

COURSE SYLLABUS

Course Title: Conceptual Chemistry

Textbook: Chemistry, Prentice Hall

Teacher: Daniel Taylor

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Extra help is after school Tuesday, Thursday, and by appointment.

Course Description: **Conceptual Chemistry** is a 6 credit, full year course for students in grades 10, 11 and 12. This is a lecture and lab course which meets 6 blocks per 7 day cycle. Conceptual 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, chemical quantities (the mole/mass relationship), gas laws 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: | |
| 1st Marking Period  September through November | **Topics:** Lab Safety, Scientific Method, Measurement, Matter & Energy, 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 |

Course Schedule: Scope and Sequence

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| **Approximate Time Frame** | **Topic** |
| First Semester: | |
| 2nd Marking Period  November through January | **Topics:** Periodicity, Ionic Bonding,  Covalent Bonding  **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 |
| Second Semester: | |
| 3rd Marking Period  February through April | **Topics:** Chemical Compound Naming,  Chemical Reactions, Stoichiometry.  **Specific Content:**  Naming and Formulas of Ionic Compounds  Naming and Formulas of Molecular Compounds  Chemical Quantities and the Mole/Mass Relationship  Percent Composition By Mass  Empirical Formula  Describing Chemical Reactions  Types of Chemical Reactions  Simple Oxidation Reduction Reactions  Balancing Reaction Equations |
| 4th Marking Period  April through June | **Topics:** States of Matter, Gas Laws, Acids and Bases.  **Specific Content:**  Nature of Gases  Liquids and Solids  Changes of State  Theories, Behavior and Properties of Gases  The Gas Laws  Acid / Base Definitions, Properties and Theories  Acid / Base  pH scale  Neutralization Reactions  Salts |

**Materials Required:**

* Acceptable notebook
* 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 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 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

* 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)