
PETERS TOWNSHIP HIGH SCHOOL

COURSE SYLLABUS: CHEMISTRY FOR LIFE

Course Overview and Essential Skills

Chemistry is the study of matter, how matter changes, and the energy associated with those changes. It is a fascinating course that will be investigated through discussion and experimentation. An understanding of chemistry leads to a better understanding of the world around us. This course focuses on showing students how chemistry is involved in all aspects of a student's life; from alarm clocks and breakfast foods, to textiles, plastics and pharmaceuticals, and even to the human body. Essential skills will include problem solving, group work, and the ability to make connections to the real world.

Course Textbook and Required Materials

- Stacy, Angelica M., Janice A. Conrod, and Jennifer Claesgens. *Living by Chemistry*. Emeryville, CA: Key Curriculum, 2010. Print.
- Ex: 3 ring binder, calculator (not cell phone app), pen or pencil.

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
Alchemy	Matter and Properties (A Penny for Your Thoughts lab, All That Glitters lab: Density) students will observe chemical change firsthand and calculate density. Atoms, Elements and Compounds (Copper Cycle Lab, Breaking the Code lab) students will conduct a series of chemical reactions like they would a flowchart and identify the trends of the periodic table. Atomic Theory (Atomic Pudding lab, Subatomic Heavyweights: Isotopes lab, Old Gold: Nuclear Chem lab) students will compare various model of the atom, identify and calculate masses of isotopes, and interpret nuclear equations, Ionization (Technicolor Atoms: Flame Tests lab, Noble Gas Envy: Ionization lab) students will identify atoms in compounds and explore electron transfer. Classifying Matter (Electron Glue: Bond Types lab) students will explain physical properties based on bonding. Unit Test.	Quarter 1
Smells	Carbon Based Chemistry (HONC: Bonding Tendencies lab, Where's the Fun: Functional Groups lab, Making Scents: Analyzing Ester Synthesis lab) Students will be able to use the HONC-1234 method to draw molecules, use smell as a bonding identifier, and create different smells. 3-D Chemistry (Molecular modeling labs and activities lab) students will build and compare structural molecules. Molecules in Action (Polar Bears and Penguins: Polarity and Smell lab, Sniffing it Out: Phase, Size, Polarity and Smell) Students will understand chemical polarity and relate polarity to smell. Section review and Unit Test	Quarter 2
Weather	Factors Affecting Weather (Weather or Not: Pressure and Temperature, Hot Enough: How Thermometers Work, Front and Center: Density, Temperature and Fronts) Students will understand what causes weather change, relate volume to temperature and will combine knowledge to relate density and temperature to weather fronts, Gas Laws (Be the Molecule: Molecular View of Pressure, Cloud in a Bottle: Cloud Formation lab) students will take a deeper look into the formation of clouds and make a connection between air pressure and forecast, Molecular Study of Gases (Take a Breath: Ideal Gas Law) students will understand the main principles of the ideal gas law and	Quarter 3

	know how to apply them. Section review and Unit Test	
Toxins	Changes in Matter (Toxic Reactions: Signs of a Chemical Change, Spare Change: Chemical vs. Physical Change) students will interpret chemical equations involving toxins, explore changes in mass that may occur during chemical or physical changes. Molar Relationships (Lethal Dose: Toxicity and Mole Calculations, Make it Count: Indirect Measurement) students will calculate and compare the toxicity of various substances, and relate mass to number of atoms. Solution Chemistry (Bearly Alive: Solution Concentration, Holey Moley: Making Solutions) Students will explore solutions and the concentration of dissolved solids in solution, and described the importance of concentration in toxins, Acids and Bases (Acids and Bases at Home Lab, Phooey: pH and its Meaning, Neutral Territory: Neutralization Reactions) students will predict and test the acidity of common household chemicals and know how to neutralize acids with bases and vice versa. Section review and Unit Test	Quarter 4

*This course is designed as a series of lessons that include reading, activities and corresponding book work. The list of lessons above build on one another so they are covered sequentially. The list is by no means exhaustive and other supplemental lessons and activities will be added as need arises.

****Depending on the needs of the class or changes in the school year, the course outline is subject to change.***