Western High School
Science Department
Course Syllabus

Teacher: Mrs. Wehrell
Subject: Pre-AP Chemistry / Chemistry I
Phone: 754-323-2400 Ext. 3190
Email: tami.wehrell@browardschools.com;

Room: 1143
Planning Hour: ***

Course Description:

Chemistry provides opportunities for students to study the composition, properties, and changes associated with matter. Topics will include, but not be limited to: the classification and structure of matter, atomic theory, the periodic table, bonding, chemical formulas, chemical reactions and balanced reactions, behavior of gases, physical changes, acids, bases, and salts. Laboratory activities which include the use of the scientific method, measurement, laboratory apparatus and safety are an integral part of this course. Chemistry is an extremely math-oriented course and you will be required to solve numerous math problems as part of this course, as well as to explain chemical theory in both oral and written form. Research skills will be developed using the internet. *The overriding aim of this course is to promote the understanding of chemical concepts, as they pertain to the relationship of the submicroscopic world to the macroscopic world to the world around us and our environment.*

Resources:

Text: MODERN Chemistry by Holt, Rinehart and Winston
Websites www.westernchemistry.com , www.sciencegeek.net
www.phschool.com/atschool/chemistry.html , www.beep.browardschools.com

Materials:

NOTEBOOK/ FOLDER: You must keep a separate organized notebook. A one-inch binder or pocket prong folder is useful.

CALCULATOR: A scientific calculator is recommended for this class. (Helpful functions for your calculator to have: scientific notation, exponents, and logarithms. A graphing calculator is NOT necessary for this course.)

PENCILS/pens, HIGHLIGHTERS. You will need all for these for chemistry class.

A **USB flash drive** (key drive) is recommended. Computer access and internet are helpful.

Evaluation:

Broward County Grading Scale:		**Approximate Grading Breakdown:**		
			Pre-AP Chemistry	**Chemistry I**
90 – 100%	A	Homework/Classwork	25%	30%
87 - 89%	B+	Tests/Quizzes	50%	40%
80 – 86 %	B	Labs	25%	30%
77 – 79%	C+			
70 – 76%	C	All assignments are graded on a point system. The final grade is tallied by the following method: the total cumulative points earned out of the total possible points for each category will be converted to a percentage, multiplied by the categorical weighting factor, and added together.		
67 – 69%	D+			
60 – 66%	D			
0 - 59%	F			

- *Midterm exam will cover all of semester one content, and the final exam will cover all of semester two content. It will consist of multiple choice, short answer, and essay questions.*
- *All school and county policies will be followed as per the Broward County Student Code of Conduct.*
- *Plagiarizing or copying labs or projects will result in a zero and cannot be made up.*
- *Cheating or copying on any class work, homework, quiz, or test will result in a zero and cannot be made up.*
- *Chewing gum, eating food, and using cell phones or I-pods in class are strictly prohibited. Electronic devices can be confiscated and given to the administration.*
- *Inappropriate or immature behavior will result in a zero for an activity or assignment and may result in loss of lab privileges or a referral.*
- *Students must remain in their seats until the bell rings. I understand that Mrs. Wehrell will dismiss the class, not the bell.*
- *If a student is absent when an assignment is due, the work or lab report is due on the day the student returns to class.*
- *All tests need to be made up within a week before or after school. If a student is absent for the test review they are still expected to take the test on the scheduled day.*
- *Missed labs or activities will result in an alternate assignment due within one week or may be excused.*
- *Labs and projects may be turned in one class day late with a penalty of one letter grade.*

. I have read Mrs. Wehrell's rules and am required to comply with them in order to succeed in this class.

Student's Name_____Student's Signature_____Parent's Signature_____

QUARTERLY BREAKDOWN

FIRST QUARTER				
Topic	**Reference**	**Activities**	**Sunshine State Standards (SSS)**	**Time To Complete**
The Nature of Chemistry. Chemistry and You. The basic concepts of chemistry, the nature of science and scientific method, organizing data, safety in the laboratory, units of measurement, unit conversions, scientific notation, and significant figures. Energy and Matter. Forms and units for energy, the definition of and units for temperature, the various forms of matter (elements, compounds, and mixtures), the matter-energy relationship, kinetic theory, the laws of conservation of mass and energy, chemical and physical properties and changes.	Chapter 1 Chapter 2	Measurement & Density; Conservation of Mass; Physical Properties; Melting Points; Applied Measurements	SC.A.1.4 SC.B.1.4 SC.B.2.4 SC.F.1.4 SC.G.1.4 SC.H.1.4 SC.H.2.4 SC.H.3.4	11 days
The Structure of Matter. Atomic Structure. Parts of the atom, the development of atomic models and currently accepted theories, changes to the nucleus, radioactivity, writing nuclear reactions. Electron Configurations. Electromagnetic radiation, development of quantum theory, modern atomic models, the wave-particle nature of matter, electron configurations. The Periodic Table. Development of the periodic table; the relationship of the periodic table to the structure of the atom and the properties of the elements; periodic trends for atomic and ionic radii, metallic character, ionization energy, electron affinity and electronegativity. Groups of Elements. Properties of, as well as sources and uses of each of the following families of elements: reactive metals, transition metals, inner transition metals, nonmetals, and the unique nature of hydrogen	Chapter 3 Chapter 4 Chapter 5 Chapter 5	Average Atomic Mass; Flame Tests for Ions; Electron Configuration of Metals	SC.A.1.4 SC.A.2.4 SC.B.1.4 SC.B.2.4 SC.F.1.4 SC.G.1.4 SC.H.1.4 SC.H.2.4 SC.H.3.4	21

Sunshine State Standards Description

SC.A.1.4: The student understands that all matter has observable, measurable properties
SC.A.2.4: The student understands the basic principle of atomic theory
SC.B.1.4: The student recognizes that energy may be changed in form with varying efficiency
SC.B.2.4: The student understands the interaction of matter and energy
SC.F.1.4: The student describes patterns of structure and function of living things
SC.G.1.4: The student understands the competitive, interdependent, cyclic nature of living things in the environment
SC.H.1.4: The student uses the scientific processes and habits of mind to solve problems
SC.H.2.4: The student understands that most natural events occur in comprehensible, consistent patterns
SC.H.3.4: The student understands that science, technology, and society are interwoven and interdependent

SECOND QUARTER

Topic	Reference	Activities	SSS	Time To Complete
Interactions of Matter. Chemical Formulas and Bonding. Ionic bonding and the formation of ionic compounds, covalent bonding and the formation of molecules, the classification of compounds as acids, naming chemical compounds, writing chemical formulas. Molecular Shape. Shape and bond angles of small molecules; hybridization of atomic orbitals, Lewis-Dot diagrams, ball-and-stick and space-filling molecular models, polarity Chemical Reactions and Equations. Nature of chemical change, writing and balancing chemical reactions, types of chemical reactions.	Chapter 6-7 Chapter 6 Chapter 8	Names and Formulas of Ionic Compounds; Double Replacement Reactions; Activity Series of Metals	SC.A.1.4 SC.A.2.4 SC.B.1.4 SC.B.2.4 SC.C.2.4	13
Stoichiometry The Mole. The mole concept, determination of formula and molar masses, mole conversions, mass percent, empirical and molecular formula determinations.	Chapter 9		SC.A.1.4 SC.A.2.4 SC.B.1.4 SC.B.2.4 SC.C.2.4	10

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SC.B.2.4: The student understands the interaction of matter and energy
SC.C.2.4: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted
SC.F.1.4: The student describes patterns of structure and function of living things
SC.G.2.4: The student understands the consequences of using limited natural resources
SC.H.1.4: The student uses the scientific processes and habits of mind to solve problems
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THIRD QUARTER				
Topic	**Reference**	**Activities**	**SSS**	**Time To Complete**
Stoichiometry (continued) Mathematics of Chemical Equations. Ratio and proportion in chemical reactions, calculating chemical quantities, stoichiometric calculations, limiting reactants and percent yield. Heat in Chemical Reactions. Introduction to thermodynamics, heat, enthalpy changes, Hess's Law, calorimetry	Chapter 10 Chapter 10	Percent Composition; Stoichiometry; Reaction Efficiency; Heat of Fusion; Enthalpy of Solution	SC.A.1.4 SC.A.2.4 SC.B.1.4 SC.B.2.4 SC.H.1.4 SC.H.2.4 SC.H.3.4	15
States of Matter Gases. Kinetic theory, measurement of gases, Boyle's Law, Charles's Law, Avogadro's Law, Gay-Lussac's Law, Dalton's Law, Combined and Ideal Gas Laws, gas density. Liquids and Solids. Kinetic-molecular theory of condensed states of matter, how attractions between particles affects the physical state of matter, physical properties of liquids & solids and their relationship to intermolecular attractions (dispersion forces, dipole forces, hydrogen bonding), viscosity, surface tension, crystal structures, amorphous solids, changes of state	Chapter 11 Chapter 11	Determination of the Molar Mass of a Gas; Determining the Heat of Fusion of Ice.	SC.A.1.4 SC.A.2.4 SC.B.1.4 SC.B.2.4 SC.C.2.4 SC.D.2.4 SC.F.1.4 SC.G.1.4 SC.G.2.4 SC.H.1.4 SC.H.2.4 SC.H.3.4	7
Chemical Equilibrium Solutions. Nature of solutions and their components; units of concentration, including molarity, molality, and mole fraction; solution formation; Raoult's Law; colligative properties	Chapter 12-13		SC.B.2.4 SC.C.2.4 SC.H.1.4 SC.H.2.4 SC.H.3.4	6

Sunshine State Standards Description

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SC.A.2.4: The student understands the basic principle of atomic theory
SC.B.1.4: The student recognizes that energy may be changed in form with varying efficiency
SC.B.2.4: The student understands the interaction of matter and energy
SC.C.2.4: The student understands that the types of force that act on an object and the effect of that force can be described, measured, and predicted
SC.D.2.4: The student understands the need for protection of the natural systems on Earth
SC.F.1.4: The student describes patterns of structure and function of living things
SC.G.1.4: The student understands the competitive, interdependent, cyclic nature of living things in the environment
SC.G.2.4: The student understands the consequences of using limited natural resources
SC.H.1.4: The student uses the scientific processes and habits of mind to solve problems
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Quarterly Project Outline: One project will be due per quarter

First and Second Quarter:	First Quarter: ADOPT AN ELEMENT project and 3-D model. Your instructor will give you the rubric for this assignment within the third week of class Second Quarter: FAMOUS SCIENTISTS PROJECT The rubric for this project will be given to you the first week of the second quarter
Third Quarter and Fourth Quarter:	Third Quarter: mole project Fourth Quarter: APPLIED CHEMISTRY PROJECT: The rubric for this project will be given to you the first week of the third quarter. APPLIED CHEMISTRY PROJECT: A complete rubric/outline for this project will be distributed to students during the first week of the quarter. Class time may be provided to students for gathering information for their project.