Chemistry/Honors Chemistry - Syllabus 2022-2023

I. Teacher Information

Teacher name: Dr. Monica Cooper	Room: 2159
Tutorial Days: Wednesday 3:45-4:45 pm	Google Classroom Codes: oebuwpm
Teacher Email: monica.cooper1@apsk12.org	Google Meets login information: https://meet.google.com/avr-brve-ksa

II. Course Description and Objectives

Chemistry is the study of the composition of matter and the changes it undergoes. Through this class, students will explore the atomic structure of matter, chemical composition and reactions, nomenclature, stoichiometry, modern atomic theory, energy in chemical reactions, and chemical bonding. Inquiry-based and laboratory activities will be an integral part of the coursework. Through their study of chemistry, students will become more scientifically and technologically literate to make better personal and societal decisions.

At the completion of this course, students will have mastered the following instructional goals:

- Apply concepts of scientific inquiry
- Describe theories, technology, and human endeavors have contributed to current scientific knowledge
- Comprehend and apply principles and properties of matter and energy
- Demonstrate knowledge of chemical reactions and identify reaction types
- Demonstrate and apply knowledge of solutions and solution properties
- Demonstrate knowledge of the gas laws and their calculations
- Utilize symbols and key terms as they are used in a specific scientific or technical context
- Write arguments focused on science specific content

Georgia Standards of Excellence: (Chemistry)

SC1. Obtain, evaluate, and communicate information about the use of the modern atomic theory and periodic law to explain the characteristics of atoms and elements.

a. Evaluate merits and limitations of different models of the atom in relation to relative size, charge, and position of protons, neutrons, and electrons in the atom.
b. Construct an argument to support the claim that the proton (and not the neutron or electron) defines the element's identity.
c. Construct an explanation based on scientific evidence of the production of elements heavier than hydrogen by nuclear fusion

d. Construct an explanation that relates the relative abundance of isotopes of a particular element to the atomic mass of the element.
e. Construct an explanation of light emission and the movement of electrons to identify elements. f. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms (i.e. including atomic radii, ionization energy, and electronegativity)
g. Develop and use models, including electron configuration of atoms and ions, to predict an element's chemical properties.

SC2. Obtain, evaluate, and communicate information about the chemical and physical properties of matter resulting from the ability of atoms to form bonds.

a. Plan and carry out an investigation to gather evidence to compare the physical and chemical properties at the macroscopic scale to infer the strength of intermolecular and intramolecular forces.
b. Construct an argument by applying principles of inter-and intra-molecular forces to identify substances based on chemical and physical properties.
c. Construct an explanation about the importance of molecular-level structure in the functioning of designed materials. (Clarification statement: Examples could include why electrically conductive materials are often made of metal, flexible but durable materials are made up of long chained molecules, and pharmaceuticals are designed to interact with specific receptors.)
d.Develop and use models to evaluate bonding configurations from nonpolar covalent to ionic bonding. (Clarification statement:VSEPR theory is not addressed in this element.)
e.Ask questions about chemical names to identify patterns in IUPAC nomenclature in order to predict chemical names for ionic (binary and ternary), acidic, and inorganic covalent compounds. f.Develop and use bonding models to predict chemical formulas including ionic (binary and ternary), acidic, and inorganic covalent compounds.
g.Develop a model to illustrate the release or absorption of energy (endothermic or exothermic) from a chemical reaction system depends upon the changes in total bond energy.

SC3. Obtain, evaluate, and communicate information about how the Law of Conservation of Matter is used to determine chemical composition in compounds and chemical reactions.

a.Use mathematics and computational thinking to balance chemical reactions (i.e., synthesis, decomposition, single replacement, double replacement, and combustion) and construct an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
b.Plan and carry out an investigation to determine that a new chemical has been formed by identifying indicators of a chemical reaction (e.g., precipitate formation, gas evolution, color change, water production, and changes in energy to the system).
c.Use mathematics and computational thinking to apply concepts of the mole and Avogadro's number to conceptualize and calculate •percent composition •empirical/molecular formulas•mass, moles, and molecules relationships•molar volumes of gases
d.Use mathematics and computational thinking to identify and solve different types of reaction stoichiometry problems (i.e., mass to moles, mass to mass, moles to moles, and percent yield) using significant figures.(Clarification statement:For elements and emphasis is on use of mole ratios to compare quantities of reactants or products and on assessing students' use of mathematical thinking and not on memorization and rote application of problem-solving techniques.)

e.Plan and carry out an investigation to demonstrate the conceptual principle of limiting reactants.

SC4. Obtain, evaluate, and communicate information about how to refine the design of a chemical system by applying engineering principles to manipulate the factors that affect a chemical reaction.

a.Plan and carry out an investigation to provide evidence of the effects of changing concentration, temperature, and pressure on chemical reactions. (Clarification statement:Pressure should not be tested experimentally.)b.Construct an argument using collision theory and transition state theory to explain the role of activation energy in chemical reactions.(Clarification statement:Reaction coordinate diagrams could be used to visualize graphically changes in energy (direction flow and quantity) during the progress of a chemical reaction.)
c.Construct an explanation of the effects of a catalyst on chemical reactions and apply it to everyday examples.
d.Refine the design of a chemical system by altering the conditions that would change forward and reverse reaction rates and the amount of products at equilibrium. (Clarification statement:Emphasis is on the application of LeChatelier's principle.)

SC5. Obtain, evaluate, and communicate information about the Kinetic Molecular Theory to model atomic and molecular motion in chemical and physical processes.

a.Plan and carry out an investigation to calculate the amount of heat absorbed or released by chemical or physical processes.(Clarification statement:Calculation of the enthalpy, heat change, and Hess's Law are addressed in this element.)
b.Construct an explanation using a heating curve as evidence of the effects of energy and intermolecular forces on phase changes.
c.Develop and use models to quantitatively, conceptually, and graphically represent the relationships between pressure, volume, temperature, and number of moles of a gas.

SC6. Obtain, evaluate, and communicate information about the properties that describe solutions and the nature of acids and bases.

a.Develop a model to illustrate the process of dissolving in terms of solvation versus dissociation. b.Plan and carry out an investigation to evaluate the factors that affect the rate at which a solute dissolves in a specific solvent.
c.Use mathematics and computational thinking to evaluate commercial products in terms of their concentrations (i.e., molarity and percent by mass).
d.Communicate scientific and technical information on how to prepare and properly label solutions of specified molar concentration.
e.Develop and use a model to explain the effects of a solute on boiling point and freezing point. f.Use mathematics and computational thinking to compare, contrast, and evaluate the nature of acids and bases in terms of percent dissociation, hydronium ion concentration, and pH.(Clarification statement:Understanding of the mathematical relationship between negative logarithm of the hydrogen concentration and pH is not expected in this element. Only a conceptual understanding of pH as related to acid/basic conditions is needed.)
g.Ask questions to evaluate merits and limitations of the Arrhenius and Bronsted-Lowry models of acid and bases. h.Plan and carry out an investigation to explore acid-base neutralization.

III. Materials and Supplies

schedules, attendance records and grades. To activate your account, visit the school to receive your login (activation key).

Needed: Any notebook/journal, paper, binder (of your choice) for notes, pens, pencils, and a calculator/phone calculator will do. PERSONAL COMPUTER.

Wish list: Printing paper, tissues, pencils, hand sanitizer.

IV. Primary Text(s)

https://flexbooks.ck12.org/cbook/ck-12-chemistry-flexbook-2.0/

Additional supplies will be required throughout the year as projects and presentations arise. You'll be given plenty of notice to have these when the time comes.

V. Approaches to Teaching & Learning

- **Middle Years and Diploma Program**

VI. Course Outline/Curriculum Overview

The following academic concepts will be covered. THIS IS ONLY A GUIDE AND IS SUBJECT TO CHANGE.

Unit 0: Introduction/Lab Safety	
Unit 1: Atomic Structure and Periodic Table	
Unit 2: Bonding and Intermolecular Forces	
Unit 3: Law of Conservation of Matter	
Unit 4: Rates of Reaction	
Unit 5: Thermochemistry & KMT & Gases	
Unit 6: Solutions & Acids & Bases	

VII. Technology Expectations for Learning

- ***From district Expectations for Technology:***
  There may be times when the teacher will ask you to utilize your own technology during a class. This technology can include a smartphone, laptop, or tablet. When personal technology is not required by the teacher, the electronic device should be OFF and AWAY.

- Teacher description of required technology & expectation of usage, i.e. bring laptop daily , and online/websites platforms required for usage

    - Online Resources for students
        - i.e. khan Academy , desmos, virtual tutor

VIII. Grading Policy

Infinite Campus Categories	Weight	Sample Assignments
Formative Pre-Assessment	0%	Pre-Test/Diagnostic Test
Assessment During Learning	**25%**	Performance-based Assessments/Quizzes/Mid-unit
Group/Independent Practice (In Class)	**40%**	Classwork/Projects/Labs/Group work/Read 180/ Math 180/APEX
Homework	**5%**	Additional Practice (Khan Academy, Desmos, USA Test Prep, Geogebra, etc.)
Summative Assessment	**30%**	MYP Assessments/Culminating Projects/Unit Tests/Final Exam

Grading Scale **A: 90-100** **B: 80-89** **C: 70-79** **F: 0-69**

Grading Systems-Grading Expectations [See Board Policy IHA-R (1)]

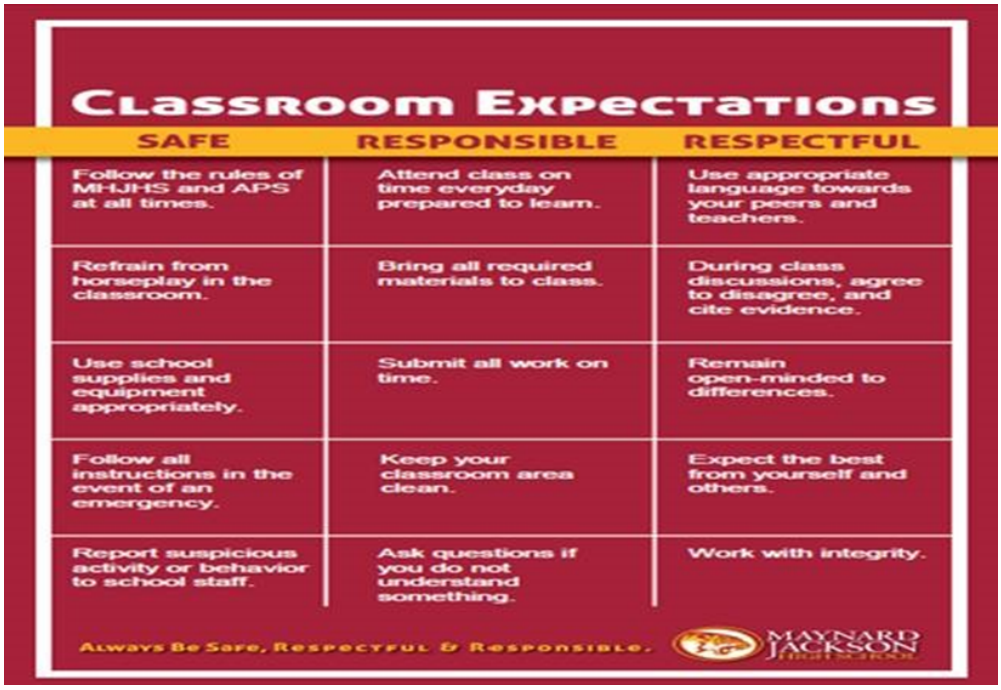
https://go.boarddocs.com/ga/aps/Board.nsf/goto?open&id=9DGK564F8144#

IX. Assessment Calendar

Unit/Benchmark Assessments - TBD
Final Exam (December/May) - TBD
GA Milestone - TBD

X. Classroom Expectations

- ***Jaguar CODE*** **-** All classroom rules and expectations must be in the Jackson CODE format.



Incompletes/Make-Up

a. Students who have not demonstrated mastery of standards due to documented medical absences or other reasons approved by the principal may receive a temporary grade of "Incomplete" (I) with a written performance plan approved by the principal.

b. Student mastery must be reassessed and incompletes changed to an evaluation/grade within 4.5 weeks. The principal shall authorize all grade changes. (See Section 6. Grade Changes.)

c. If an incomplete is not changed during this time period, schools will update all such letter grades to the grade otherwise reflected in the grade book. The Data + Information Group will provide a report for schools of all outstanding "Incompletes".

Deficiency Notices and Progress Reports

The student will periodically receive from the teacher GRADE PROGRESS reports and DEFICIENCY NOTICES. You should review with your parent(s) or guardian(s) **AND** they must sign and return both the GRADE PROGRESS REPORT and DEFICIENCY NOTICE on or before the assigned due date.

Academic Integrity

The Atlanta Board of Education recognizes that academic integrity is the foundation of academic excellence and student success. It is the responsibility of every student and employee to exhibit honesty, trust, fairness, respect, and responsibility in academic work at all times to support a positive learning environment in the school. Violations of board policy JFA Academic Integrity shall be handled as violations of the student code of conduct and addressed via the progressive discipline guidelines in the Student Handbook.

Cheating and Plagiarism Policy: *The Maynard Jackson High School Honor Code is in effect at all times.* Cheating will not be tolerated! Cheating is defined as giving or receiving information in any form that is related to a gradable experience including the use of sources of information other than those specifically approved by the teacher either during or outside of class. Students are required to sign honor pledges as applicable for major tests, projects, and/or papers.

Examples of cheating include, but are not limited to:

- Plagiarism – using words or ideas from a published source without proper documentation; using the work of another student (e.g. copying another student's homework, composition, or project); using excessive editing suggestions of another student, teacher, parent or paid editor.
- Looking at someone else's paper during a test or quiz.
- Cheat sheets of any kind.
- Knowingly accepting or giving information concerning the contents of a test or quiz.
- Changing the appearance of computer printouts.
- Allowing another student to complete any web-based activities using your name and login information.

Students guilty of cheating will receive a grade of "0" on the assignment or test. An opportunity to demonstrate mastery of the standards assessed on the assignment or test will be given during after school tutorial days and times.

XI. Disclaimer

This syllabus may be subjected to change without prior notice. The latest changes will be announced in class and the most current version posted and distributed via the class website/google classroom.

IB- Middle Years Programme

This course is part of the International Baccalaureate Middle Years Programme at Maynard Jackson High School which aims to help IBMYP learners to become principled, open-minded, caring, balanced, reflective, and knowledgeable inquirers, thinkers, communicators, and risk-takers. The learning experiences will allow students to gain analytical skills, promote informed decision-making, engage in teamwork and collaboration, frame their own inquiries, pursue personal aspirations, set challenging goals, and have the persistence to achieve them. Students will work towards a deepening of their conceptual understanding as they approach concepts from a range of perspectives. As concepts are studied throughout the year, the following global contexts will be in constant consideration: identities and relationships, orientation in time and space, fairness and development, globalization and sustainability, scientific and technical innovation, and personal and cultural expression. IBMYP Assessments aim to support and encourage student learning by providing feedback and promoting deep understanding of subject content by supporting students in their inquiry in real-world contexts. Specific assessment criteria with subject objectives will be provided. Timelines and descriptions of tasks will be provided. Students will be assessed on a 0-7 IB scale in order to receive an IB grade at the end of the course. The IB grade will not affect students' transcript grades and it is for IB reporting purposes only.

A year-long IBMYP ***Personal Project*** *accompanied by a journal is to be produced at the end of the* ***10th grade year****. The Personal Project enables students to engage in practical exploration through a cycle of inquiry, action, and reflection. Over the course of their 10th grade year, students will receive a grade for their Personal Project each semester in all four of their core content classes (Science, Math, English Language Arts, and Social Studies). The final project grade will count as a summative assessment for the second semester in all four courses. For more information about the Middle Years Programme Personal Project, please visit maynardjacksonib.weebly.com*

I acknowledge that I have read and reviewed this syllabus along with my child.

Parent Name (Print): _____

Parent Signature: _____

Parent Email Address: _____