JOHN F. KENNEDY HIGH SCHOOL
6715 GLORIA DRIVE SACRAMENTO CA 95831
JFK.SCUSD.EDU
916.395.5090
HOME OF THE COUGARS

2021-2022 COURSE SYLLABUS

Chemistry in the Earth System

GENERAL INFORMATION:
Instructor name: Andrea Horgan

Room number: B26

Phone number: 916-433-5200 ext 506126

Tutoring Hours: Before school (7:45am -8:15 am) and during lunch (T,Th)

Email Address: andrea-horgan@scusd.edu

Remind code: @jfkchem

*Remind is not a requirement, HOWEVER, information will be sent out through Remind on a regular basis. The instructor will be available to answer any questions until 8pm every night. Parents are also invited to join Remind if you wish to receive updates or you need to contact me.

COURSE DESCRIPTION:

Chemistry in the Earth system is a (college preparatory) two-semester course designed to meet the needs of students pursuing a major in a University or College. It integrates the concepts of Chemistry and Earth science linking cross-cutting concepts to make them more relevant to the students.

The course will meet the A-G requirements for the University of California and the California State University systems. To meet the **minimum** qualifications for these colleges, a grade of C or better must be achieved. The course is strictly aligned with the Next Generation Science Standards (NGSS) that have been adopted by our state.

The laboratory portion of the course will correlate with the instructional units rounding out the course. Labs will likely account for about 25% of the class time. During online instruction the labs will have a virtual learning aspect (simulations, videos, etc.).

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TEXTBOOK:

Pearson: Experience Chemistry in the Earth System

Students will receive online access to the Savvas platform where they will be able to access the book, labs and handouts associated with the book. Students will also receive a physical copy of the textbook that they will be able to write in.

GENERAL ORDER OF TOPICS:

Unit 0: General Chemistry Concepts (2 Weeks)

- Significant figures
- Scientific Notation
- Density
- Conversions

Unit 1: Periodic Trends and the Periodic Table (4 Weeks)

- Periodic table basics – groups and periods
- Structure of the atom (protons, neutrons, electrons)
  - Isotopes
  - Average atomic mass
  - Electron configuration
  - Electron transition
- Valence shell of an atom and Lewis dot structure
- Identification of valence electrons by position on periodic table
- Reactivity and valence electrons
- Covalent, Ionic and Metallic bonds and how they relate to the periodic table
- Ions- definition and predicting charge based on position on periodic table
- Periodic trends: electronegativity, ionization energy and atomic radii and Coulomb's law

Unit 2: Chemical Reactivity (4 Weeks)

- Parts of a chemical reaction
- Law of Conservation of Matter
- Types of reactions
- Writing and balancing chemical equations
- Determining bonds and types of bonds in a chemical reaction
- Naming and writing ionic compounds
- Naming and writing covalent compounds

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Unit 3: Properties of Matter (5 Weeks)

- Physical and chemical properties of matter
- Physical/chemical change
- Mixtures and separation of mixtures
- Intermolecular forces and how they relate to melting point, boiling point, vapor pressure and surface tension
- Kinetic molecular theory
- Phases of matter (solid, liquid, gas)
- Gas laws
- Earth's atmosphere and how Carbon Dioxide has changed climate
- Carbon Cycle

Unit 4: Thermochemistry (4 Weeks)

- System and surrounding and energy transfer
- Endothermic and exothermic reactions and how they relate to the bond energies of the reactants and products
- Law of conservation of energy
- Calorimetry
- Conduction, convection, radiation
- Plate tectonics in the earth and how conduction, convection and radiation play a role
  - Earth's structure

Unit 5: Stoichiometry (5 Weeks)

- Moles
- Avogadro's number
  - Calculations involving atoms to moles, moles to atoms
- Quantitative calculations involving reactions
  - Mass to moles
  - Moles to mass
  - Predicting reactants/products
  - Limiting reactants
  - Theoretical yield

Unit 6: Reactions in Solutions (8 Weeks)

- Solvent and solute
- Electrolytes
- Saturated/Unsaturated solutions
- Molarity

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- Reaction rate
  - temperature
  - concentrations
  - effective collisions
- Equilibrium
  - Equilibrium constant
  - Forward reaction and reverse reaction
  - Le Chatelier's principle
- Acids/Bases
  - Strong acids/bases
  - Weak acids/bases
  - pH
  - Bronsted-Lowry acids and bases
    - Conjugate acids/bases
  - Ocean Acidification

Unit 7: Earth Science (4 Weeks)

- Natural resources
- Weather and climate
- Global Climate Change

GRADING:

The grading scale is as follows:

Grade	Percent
A	89.5-100%
B	79.5-89.4%
C	69.5-79.4%
D	59.5-69.4%
F	Below 59.4%

The grades will be divided as:

10% - Classwork/Homework
40% - Tests
30% - Labs (including lab reports and lab quizzes)
20% - Quizzes

MAKEUP WORK:

Makeup work will be given if the absence is excused. Students have as many days to make up the work as they were absent. For example, if a student was absent for 3 days, he/she has 3 days to make up the work missed.

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If you have missed school, please check the Google Classroom for any work that you have missed.

LATE WORK:
Any late work that is turned in after the due date (that does not qualify as makeup work) will be given half credit.

CELL PHONE POLICY:
In person: There will be occasions where cell phones will be used for data collection or to look up information online. If cell phones are being used during an inappropriate time, the student will be given one warning. After that, the cell phone will be confiscated and turned into the administration. If a cell phone is out at ANY time during a test FOR ANY REASON, the student will receive a zero on the test WITHOUT A WARNING.

DAILY AGENDA:
Homework check: Homework and assignments could be in paper or online format.
Online: Homework needs to be uploaded to Google Classroom. Please do not email your homework to me.

In person: Homework will be checked by me at the beginning of the class period.

Daily lesson/lab: Lessons and labs will be based on the unit of study and will include lecture, group work, independent study and group labs.

CLASS RULES AND EXPECTATIONS:
1. Do only those things which allow you and others to learn
2. Bring materials necessary for learning
a. Please bring textbooks to class on the days assigned.
b. Bring a pen/pencil and paper to class.
3. No food or drinks
    a. Because of the nature of the course and exposure of chemicals, food and drinks will not be allowed. Students may bring a water bottle.
4. Respect teacher and classmates.
5. Arrive on time.
    a. Any tardies will result in a lunch detention issued by the administration

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6. ALL LABORATORY SAFETY RULES AND PROCEDURES MUST BE FOLLOWED.

a. A separate list of lab rules and procedures will be handed out to each student.