## Physical Science

Fall 2015

**Instructor:** Ms. Megan Kovach

**Email:** megan\_kovach@charleston.k12.sc.us

**Website:** http://kovachPS.weebly.com

**Remind.com Text Reminders:** text @KovachPS to 81010

**Office Hours:** Mornings before school (M/Tu/Th) 7:45 – 8:15 in room C-210

**Course Description:**

Physical Science is designed to serve as a foundation course for other high school science courses. It is a laboratory course that integrates principles of chemistry and physics. It emphasizes inquiry-based learning, process skills, and higher order thinking skills. Instruction is based on the SC Science Curriculum Standards and Common Core Curriuculum. Chemistry units include: metrics, composition of matter, atomic structure, the periodic table, chemical bonds, balancing chemical reactions, and types of reactions. Physics units include: velocity, acceleration, forces and motions, energy and transformations of energy, electricity, and magnetism. Because experimentation is the basis of science, laboratory investigations are an integral part of this course. Investigative, hands-on laboratory activities that address the high school inquiry standards are central to effective instruction in this course.

**Scope and Sequence:**

The following scope and sequence of the class is based on the South Carolina Physical Science State Standards. The number of days we will be spending on each section is shown as well as the standards we will be covering in the unit.

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| --- | --- |
| **Scope** | **Sequence** (\* = Honors) |
| **Chemistry**   1. Structure and Properties of Matter   **Standards: H.C.1A–1, 3, 4, 5, 7, 8**  **H.C.4A– 1, 2, 3**  Physical Properties of Matter  States of Matter and Phase Changes  Chemical Properties of Matter  Atoms, Elements, Molecules, Compounds   1. Structure of Atoms   **Standards: H.C.2A– 1, 2**  **H.C.3A– 1, 2, 3, 4**  Model of the Atom  Periodic Table  Ions of Elements  Isotopes of Elements   1. Chemical Reactions   **Standards: H.C.6A– 1, 3**  Atomic Interactions  Chemical Bonding  Chemical Formulas  Chemical Reactions  Law of Conservation of Mass  **Physics**   1. Motions and Forces   **Standards: H.P.2A– 1, 2, 3, 4, 5, 6**  **H.P.2B– 1, 2, 3, 7**  **H.P.2C– 1, 5**  **H.P.2D– 6, 10**  Motion: Speed and Acceleration  Factors that affect acceleration  Generate and interpret graphs of linear motion  Newton’s Three Laws of Motion  Examples of Newton’s Laws in everyday life  Gravitational Force  Weight   1. Energy, Conservation of Energy, Nuclear Energy   **Standards: H.P.3A– 1, 2, 4, 5**  **H.P.3B– 2, 3**  **H.P.3G– 2, 3**  Potential and Kinetic Energy  Transformations among other forms of energy  Friction: Heat and temperature  Nuclear forces of an atom and reactions:  Fission, fusion, and nuclear applications   1. Electric Charges and Electricity   **Standards: H.P.2D– 1, 5, 8**  **H.P.3E– 1, 2, 3, 5, 7**  **H.C.6A– 1, 3**  Electric Forces  Charges and static electricity  Electricity and Magnetism  Electrical Circuits. | ***Unit 0***  Lab Safety  Scientific Method  Organizing Data  Metric Units  Scientific Notation\*  ***Unit 1***  Matter Characteristics  Chemical and Physical Changes  Density  Gas Laws\*  ***Unit 2***  Atomic Structure  Periodic Table  Elements and Compounds  Electron Configuration and Orbitals\*  ***Unit 3***  Bonding (Ionic and Covalent Bonds)  Chemical Formulas  Polyatomic Ions\*  ***Unit 4***  Chemical Change  Chemical Reactions  Endothermic and Exothermic Reactions  Catalysts  ***Unit 6***  Motion (Velocity and Acceleration)  Momentum\*  Vectors\*  ***Unit 7***  Forces and Newton’s Laws  Gravitation  Free Body Diagrams\*  ***Unit 8***  Energy types  Potential and Kinetic Energy  Energy Transformations  Fusion and Fission  Work  Power\*  Nuclear Decay\*  **Unit 9**  Electricity  Ohm’s Law  Electromagnetism  Series and Parallel Circuits |

**Grade Weights:**

|  |  |
| --- | --- |
| **CP**  Tests – 40%  Quizzes – 25%  Labs – 20%  Classwork/Homework– 15% | **Honors**  Tests – 50%  Quizzes – 25%  Labs/Current Event – 15%  Classwork/Homework – 10% |

**Final Exam: Students in Grades 9–12 take cumulative, standards-based, end-of-course examinations.  When applicable, schools administer State End-of-Course tests required by the S.C. Educational Accountability Act.  No student may exempt a State End-of–Course Exam.  Cumulative examinations have a computational weight of 20 percent of the final average.**

# Materials

You are expected to come to class prepared with the following items:

|  |  |
| --- | --- |
| * CALCULATOR * Pens, Pencils * 3 Ring Binder, preferably 1 inch | * Coloring utensils (colored pencils, crayons, markers) * Composition Notebook * Agenda or Planner |

# Class Assignments

This course will be presented and sequenced within an inquiry-based learning approach. In many sections, we will complete laboratory investigations before discussing the concepts in class. Because of this approach, and because much of the material builds upon what was previously learned, it is essential that you keep track of the classwork and homework assignments. You are expected to be a responsible learner. This means you should study/review the material daily, ask questions for clarification in class, answer questions in class, seek an understanding of the concept-rather than just memorizing something you don’t understand, and prepare for a test in a timely manner.

***Tests***

Tests will be given at the end of a unit. There will usually be a mix of multiple choice, interpreting data, discussion questions, and lab practicals. You will be required to use the information we have discussed in class in a test situation. Tests will NOT be simple restatement of definitions or concepts. I test for comprehension and understanding. It may take some time to get used to this method, as opposed to just memorization. *Poor test grades reflect poor preparation.* Your effort in the class will be reflected in your test grade. There are no test retakes.

***Quizzes***

Quizzes will be given throughout the semester. Many will be announced a few days in advance, however some will be unannounced. If you don’t know the material well enough on a daily basis to be successful on your quiz, you need to be studying at home or coming into see me for help.

***Homework***

You will be assigned class work / homework regularly. This work is designed to help you practice the skills we have learned in class and build on your understanding of those skills. If you don’t finish class work that we start in class, it becomes homework. It is understood that you should walk into class the next day and be ready to take, and be successful taking, a quiz on material that we covered the previous day. Even if I don’t “assign” homework, if you wouldn’t get a +90% on a pop quiz the next day, you have homework. STUDY! I check homework sporadically. You should be prepared to show it to me every day. I also sporadically collect homework. You should be prepared to turn it in to me on a daily basis. **Late homework will not be accepted except in the case of absence**. If it is not done when I collect it, it is considered late. When returning from an absence, you are responsible for turning in your missed assignments.

# Common Assessments throughout the Department

All teachers within the Physical Science department are teaching the same content, at the same level. Every class on the CP level, and then every class on the Honors level, will be exposed to the same:

* + Midterm and Final Exams
  + Unit Tests
  + Major Labs and Formal Lab Reports

# Class Participation

What you put into this class will be what you get out. Active participation is essential in Physical Science. This is true whether we are completing notes and having a class discussion, working on practice problems, or completing activities and labs. This class is not meant to be observation. You will be given many opportunities to participate in class. Remember, poor participation includes not paying attention to discussions, lectures, or instructions; sleeping; talking; and being generally disruptive.

**Make-Up and Missed Work**

***It is your responsibility to make up any missed work within five days of your return.*** Check the class website. Come see me when you miss a day. I will point you towards anything you missed. If there were any additional notes that were not part of a handout, you are responsible for getting them from a partner. You will also need to get with someone in the class who can give you an overview of the class you missed. You are responsible for keeping up with these things during non-instruction time. **IF YOU MISS A DAY, IT IS YOUR RESPONSIBILTY TO GET CAUGHT UP!**

**BEHAVIORAL PROCEDURES**

**All Wando High School and Charleston County School District policies will be adhered to.**

* **Everyone is expected to be in their seats preparing to start class before the tardy bell rings.** There will be bellwork each day waiting for you to complete the first five minutes of every class.
* **Tardies will follow the Wando High School Tardy Policy.** If the tardy bell rings and the door shuts, make your way down to the Rotunda, scan your ID, and bring your FastPass back to my classroom for entry into class.
* **Respect Yourself, Your Classmates, and This Classroom.**  Everyone’s opinions and contributions to class are welcomed.
* **Everyone will be active listeners.** When someone else is talking you must be attentive and courteous.
* **Everyone is expected to have all materials necessary for class with them everyday.**  You will need your class notebook, textbook, paper, and a writing utensil everyday in class.
* **All students will wait for specific instructions before entering the lab.** You are not to use any materials or lab equipment without explicit instruction from Mr. Banker. No student should use the sinks, safety shower, or emergency eye wash unless there is an absolute emergency.

1st offense – warning/ conference with the teacher

2nd offense – detention and parent contact

3rd offense – detention and parent contact

4th offense – referral to the administration

**Expectations for Ms. Kovach’s Physical Science**

**You can expect that I will…**

1. be proficient in the subject matter.
2. be available to answer your questions or discuss anything pertaining to this course.
3. be on time and prepared for class daily.
4. provide coherent notes and instruction.
5. manage and control the class to provide the best learning environment for everyone.
6. provide timely feedback pertaining to grades in the course.
7. clearly communicate test dates and due dates to everyone.
8. clearly communicate and apply course, classroom, Wando, and CCSD policies.

**I can expect that you…**

1. accept personal responsibility for your learning. You bear the responsibility for your learning. Your instructor serves as a guide, mentor, and resource.
2. are here to learn and are intellectually engaged by and curious about ideas.
3. understand that a great deal of learning will take place outside of the classroom in the form of studying.
4. recognize that mastery (earning an A) is seen as the ability to apply what you've learned to new situations or to solve new kinds of problems.
5. understand grades are earned by consistent effort, hard work, perseverance, and learning. If learning does not occur, all of your hard work, perseverance, and consistent effort will not ensure a passing grade.
6. will ask questions as they arise.
7. are responsible for keeping up with the class schedule and course material. Absence is not an excuse, nor does it mitigate your responsibilities.
8. are responsible for assessing your progress and seeking help.
9. come to class prepared to engage in and discuss content for each day’s lecture.