

PHYSICS

IN THE UNIVERSE

INSTRUCTOR: Mr. Sierra

GRADE LEVEL: 10 ~12

COURSE LENGTH: One Year

PREREQUISITES: Geometry (Algebra 2 preferred)

CREDIT: Meets University of California and CSU a-g science in the “d-Physical Science” category.

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COURSE DESCRIPTION:

- Using the guidance of the CA Framework’s High School 3-Course Model, NGSS Physics in the Universe has students apply their knowledge of physical science concepts in the context of Earth (plate tectonics) and Space (cosmology) Science.
- In this NGSS Physics course, the story of physics progresses from observable phenomena (motion of objects, including freefall and momentum, and motion of larger bodies, such as continental and oceanic plates) to the force fields that govern them (electric, magnetic, and gravitational) along with an understanding of how energy is conserved or converted between mechanical, electrical, nuclear, chemical, and thermal. We conclude with a connection to outer space and the astronomical objects in it.
- The course taps into students’ prior knowledge of mathematical concepts such as unit conversion, the metric prefix system, scientific notation, significant figure rules, dimensional analysis, and algebraic rules of calculations. It introduces them to new concepts such as the inverse square law and linear relationships.

The course encompasses the following major areas in a storyline format:

1. Forces and Motion
2. Forces at a Distance
3. Energy Conversion and Renewable Energy
4. Nuclear Processes and Earth History
5. Waves and Electromagnetic Radiation
6. Stars and the Origins of the Universe

LAB SAFETY & CLASS RULES:

Safety is #1. We will be working with sharp, heavy, moving and breakable objects during experiments. I will give you procedures for performing each experiment safely. If you do not follow directions and jeopardize the safety of yourself, classmates or the teacher, you may receive a zero on the assignment and/or be removed from the class.

- Conduct yourself in a responsible and respectful manner
- Turn off and put away personal electronic devices.
- Do not eat, drink (besides water) or chew gum in this room.
- Follow all written and verbal directions.
- Clean up and return materials in an orderly manner.
- Never fool around in a lab!



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CLASSROOM ETIQUETTE:

- Everyone should be in their seats with workbooks, binders, paper and writing tools ready when the bell rings. Tardies will be subject to detention (according to school policy). Cell phones, headphones and other electronics should be put away and not used during class.
- Always demonstrate respect and take responsibility for your own needs and actions. Treat others the way you would want to be treated. Be aware of your surroundings, and look for ways to help others. Strive to be a positive contribution, and **DO YOUR BEST!**
- Restrooms may be used one-at-a-time. Please wait for an appropriate time (without interrupting lecture or class discussion) and ask for permission before leaving. Sign out, take a pass, and be respectful of others' need to go by returning to class quickly.

MATERIALS:

Each student will be given a “consumable” Physics workbook to use throughout the year, but you should have a 3-ring binder to keep papers organized along with enough lined notebook paper to keep you going through the year. It would be wise to get a “cheap” calculator since cell phone calculators will not be allowed on tests.

GRADING:

50%	{	10% will be participation points earned (or lost) during class discussions.
		15% will be based on student workbooks and class notes that will include definitions from the textbook, lab write-ups and reflections on discussions.
		25% will be labs/projects to be done about twice each month.
50%	{	10% will be based on very short quizzes (exit tickets) every 2-3 class days.
		25% will be from tests approximately once every 2 weeks.
		15% will be based on the final at the end of each semester.

LATE/MAKE-UP WORK:

- It is most important that you be present, especially on **lab** days, but if you are excused (cleared by the office), you will be given an alternative assignment (e.g. type a 2-page report on a famous scientist). You will receive a zero if your absence was unexcused.
- For most other assignments, you are expected to turn in late work the day you return. It is important for you to keep an eye on our class website or check in with a classmate in order to do what is required to keep up with the class.
- Missed tests/quizzes may be completed during lunch, after school, or during “Focused Falcon” advisory on Thursdays – within two weeks of the original test date.

ACADEMIC INTEGRITY:

Cheating on homework, labs, and/or tests will result in a zero grade and a referral. Three infractions will result in your removal from the class with a failing grade. Even when working with partners during a lab, you are expected to submit your own work, in your own words. Just because you work together does not mean you turn in the same work.

Detach & Return

Please sign this portion of the syllabus, acknowledging that you have read, understand and agree to follow the rules listed above.

Print Student Name: _____ Signature: _____

Print Parent Name: _____ Signature: _____