name_____ Brian Gehring ~ gehring_brian@asdk12.org
period_____

Physics Syllabus - 2018 - Semester 2

Physics with Brian expands on our lived experience by studying the phenomena that surround us everyday. Learning physics is a journey that makes just about everything in life easier to understand, but another added benefit is the growth in a persons's ability to think critically about systems, whether it is a bike that needs fixing, a budget that needs balancing, or even the kinesthetics of the body. This course will help prepare you for future practical and academic challenges!

Topics of Study

Work, Energy, and Power
The world works on energy - both literally and in technical physics language. We will apply our knowledge of units and dimensional analysis to see how a few simple equations can quantify total energy, changes in a system's energy (work), as well as how fast those changes happen (power). Of course, these topics are closely related and will require knowledge of Newtonian mechanics from first semester. And… bungie jumping eggs?

Building Momentum
We have all heard the colloquialisms about big trucks, football linemen, and billiard balls and you have likely learned some real lessons about how collisions work in your everyday life. In this unit, you will gain knowledge that can save your life and reduce injury. A thorough knowledge of momentum is applied in many fields, from product engineers to sports physicians.

Circular Motion, Harmonic Motion, Waves
If you are starting to be bored with linear motions you will be happy to progress to some of the other ways objects move in the world. We will briefly investigate circular motion (the equations are basically the same as kinematics, but with different symbols and a new reference frame), then move to waves… which increasingly dominate our lives in this technological era.

After that…
We will decide as a class to pursue other topics such as **Electromagnetism** (electromagnetic forces, circuits, EMF, more theory that calculations), **Thermodynamics** (a detailed analysis of energy movement, often heat), **Nuclear physics** (what stuff actually is aka: atomic structure, particle physics, basic quantum mechanics theory, accelerators), **Cosmology** (origin and evolution of the universe, proof of dark matter/dark energy, basic string/multiverse/etc theories, basically the weirdness of physical existence)… or even **other units suggested by the class**.

Grading

Tests and Quizzes **40%** Final **10%**
Remember, stress destroys test performance. We will work on diminishing stress by preparing adequately for each test. Even then, physics is hard so please don't expect perfection! It is important to face difficulty before getting into the real world or college, and Physics will give you this wonderful opportunity! There will be interactive, group, online, and performance-based

test/quiz components in addition to standard calculations and written responses. **Each test will include the opportunity to earn bonus test points by competing a review assignment and/or doing corrections.**

Labs **30%**
It is hard to learn science without engaging in the process! Labs will include a variety of activities, observations, experiments, projects, and simulations. Simply following instructions is not a good way to learn, so students must take the responsibility to engage in the process of science by producing meaningful work that uses their own words to reflect, explain, question, or expand upon the topic. Remember, every new life experience involves the same scientific process, so committing to quality work in class will improve your real life!

Assignments **20%**
We need practice to build physics skills! We will also correct assignments in class. Full points are awarded for corrected problems, as long as you have tried each problem before class!

Other

Excused Absence Only - Late Work
I will accept late assignments up to 3 school days after the absence and we will arrange labs or alternative assignments to be completed within 5 school days for no penalty. Turn in late work directly to Brian. **Please meet with Brian to arrange work for extended absences in advance!! A late penalty of 30% is applied for unexcused late work.**

Academic Honesty
Never copy work. **Do not copy** from other students, and do not cut and paste from digital sources **as this will earn a 0%**. If you completed work with the help of a source (like wikipedia, or your friend Cary) then AT LEAST give them credit by writing a name, website, or ideally a complete citation/reference. Pictures need credit too! If you ever notice Brian presenting work without a reference, point out the egregious error to the class and you will earn a bonus!

Required Materials
-100 page composition notebook or similar for notes/warmups (available at Steller store)
-calculator (scientific or graphing, lenders are available… but familiarity prevents errors)
-online access to the class website www.mistergerhring.weebly.com Use the website to access our online textbook (College Physics), resources, online assignments through Web Assign and more.

Please sign below if you have read this document, visited the class website on www.mistergehring.weebly.com and agree to the expectations

STUDENT_____DATE_____

PARENT/GUARDIAN_____ DATE_____