Physics

Course Overview:
Physics is a vast subject area. In this course, we will study a wide variety of phenomena from light and sound to radioactivity to “crash” physics and molecular changes… all of this is “Physics.” We will develop mental models of many of these issues and continually refine those models over time. The idea of “energy” will be a topic we return to throughout the school year.

Units and Activities: What will we be learning about and doing in this course?

<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Main Ideas of the unit</th>
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<tbody>
<tr>
<td>Light &amp; Sound</td>
<td>How can we use the science and mathematics of waves to understand these everyday phenomena?</td>
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<tr>
<td>Radiation &amp; Radioactivity</td>
<td>Is “radiation” a health risk… or benefit? Aren't there medical treatments called “radiation?” How can we assess the risks and benefits of radiation?</td>
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<tr>
<td>Freezing &amp; Boiling</td>
<td>What are the energy considerations of boiling a substance … or freezing it? How can we understand these transitions from a particle perspective?</td>
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<tr>
<td>Crash! Collisions &amp; Un-collisions</td>
<td>Traffic officials can re-create car accidents by using science. Others use science to explain fireworks. Each is using the same science of energy &amp; momentum. We’ll explore the underlying physics of those phenomena and more.</td>
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Standards: What knowledge and skills will I gain by the end of this course?

Anchor Standards: This course will assess the knowledge and skills students build in key Anchor Standards. A student will have multiple opportunities to show their proficiency in each Anchor Standard. Below, each Anchor Standard for this course is named and described.
**Modeling** - Students will explore the natural world and apply their mental models to try to understand - on a deep level - a variety of phenomena. Through discussion and questioning, we will enhance and refine our models to match the physical world.

**Computational Thinking** - Students will move back and forth from the concrete experiences of the classroom to the abstract realm of mathematics and computational thinking. Mapping reality into symbolic language is a key science skill.

**Explaining** - Many of the other Anchor Standards will inform a student’s ability to explain the natural world. Our efforts will be to develop our understanding from simplistic to sophisticated.

**Course Standards:**

The learning outcomes for this Physics course are based on the Next Generation Science Standards and can be found here.

**Assessment of Learning:**

For information about assessment types, scoring, and overall grade calculation: click here.

**Communication:**

**How Do I Access Work from Home, and What Should I Expect?**
- All work will be posted in Google Classroom.
- The work will be explained during our in-person meetings and/or by video posted to Google Classroom.
- The work will also be explained in our Class Planner posted to Google Classroom.
- If you have any questions, email your teacher.

**How Do I Know What My Grades Are?**
- On Summative Assessments, teachers will provide both a 4-point grade and a letter grade.
- You can monitor your progress in the following ways:
  - By reading feedback and scoring returned to students on summative assessments.
  - By monitoring the scores and Overall Course Mastery Grade in the Parent/Student portal on JumpRope. Reminders to check grades will be sent from the school.
  - Communicating with your teacher if you are unclear.

**Where Can I Find This Syllabus during the School Year?**
- This syllabus will be available on the school website in each subject’s department tab once the school year is up and running. It will also be available in our Google Classroom.

**How Do I See What’s Due?**
• Assignment and summative assessment due dates with handouts are posted in Google Classroom, with connection to Google Calendar, for student access.

How Do I See What’s Past Due?
• If a student is missing a grade on an assessment, it will be listed in the red “Missing Assessment” section of the JumpRope Parent/Student Portal along with any attachments. Please contact your teacher if you have any questions.

Materials:

We will not be using a physical textbook in this class but you can access a free on-line textbook here. We will frequently need to access digital materials on Google Classroom and elsewhere. Please ensure that you bring your laptop/tablet/netbook to class for full participation.

Schoolwide Procedures:

Please see the Student Handbook for Procedures and Policies related to: Due dates and deadlines, extra credit, retaking assessments, and turnaround time for grade entry.

Personal Mobile Devices: This class will follow the procedures outlined in the student handbook.

Class Expectations:

Four norms I will seek to establish with my you:

1) **Equity** - We each have a voice. We each have the right to be heard. We each have an obligation to contribute our thoughts.

2) **Respect** - We each deserve to be heard and understood. We owe one another the basic decency of attention and consideration. We can disagree without being disagreeable.

3) **Reason** - We need to focus on evidence and logic. We should expect to provide a rationale for our thoughts. We should expect to be asked for such.

4) **Stewardship** - We each have a role to play in establishing a positive classroom culture. We each have a role to play in our own learning.