

## Foundations of Physics and Chemistry

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Foundations of Physics and Chemistry is lab oriented, rigorous science class designed to develop students understanding of fundamental scientific knowledge and the ability to think like scientists. During the first semester students will use the process of scientific inquiry, engineering design, and critical thinking to discover and apply patterns and major physics topics as motion, forces, and energy. An important aim of the course is to develop and build students math abilities, performance and problem-solving, scientific literacy, and technical communication skills that will be useful in later science courses. The learning targets in this class are aligned with ODE adopted physics, inquiry, and engineering standards.

### Materials

- Three ring binder for homework, quizzes and handouts.
- Folder to save projects
- Spiral notebook for warm ups, notes and homework. You can store your binder in class if need be, but i cannot be responsible for it.
- Blue/Black in pens and #2 pencils for class.
- Classroom copy of textbook

### Common Norms

As a learning community, we want to make sure that all students have the ability to be successful. As a result, the following behavior norms will be heavily reinforced throughout the school year:

- *Respect Air Time.*
- *Stay Focused.*
- *Respectfully Help Others Stay Focused.*
- *Own it. Fix it. Move on.*
- *Do Not Use Racist, Sexist or Homophobic Remarks.*

### Assignment Sheets

At the beginning of each new unit, students receive an assignment sheet that will be affixed into their notebooks. This assignment sheet will include a list of assignments, learning targets and key vocabulary for students to learn. This assignment sheet will be used to keep track of student progress and participation during warm-ups.

### Laboratory Investigations

On a regular basis, students will participate in laboratory investigations. Depending on the task, students will complete the lab assignment as part of the assignment sheet or as part of the major project. Labs will be graded based not only on the work that is completed but also behavior during the course of the exercise. If a student is absent for a lab assignment, it is their responsibility to contact the instructor and schedule a makeup. Because of the nature of this course, the class will be doing a lot of hands-on and group work; the students' grade depends on being able to complete this work in a timely and collaborative manner.

### First Semester Learning Targets

- Find patterns in nature and use them to predict future results or understand past evidence.
- Conduct an investigation to find and communicate the relationship between an independent /dependent variable, a relevant mathematical pattern in the collected data, and a correct prediction for additional data point.
- Represent the patterns: linear, quadratic, and inverse graphically, mathematically, and data tables, and in words.

- Make high school level graph with labeled axes, proper scale, data points with error bars, and best fit line to explain its meaning. I can recognize patterns and trends within the slope, and use the graph to make an accurate prediction.
- Identify compare and contrast patterns specifically including the concept of rate change.
- Communicate the value of finding patterns and explaining how the reasoning behind making informed decisions based on them.
- Find and use patterns and energy conservation and transformation to explain to make addictions about how interactions between objects will affect the objects.
- Use energy analysis within the engineering cycle design and find an optimal solution to an identified problem.
- Read and use information text about energy conservation and transformation answer relevant questions.
- Find and use patterns and forces to understand and make predictions about the motion of objects and forces experience.

## Grades

Assignments/Daily Work 20%

Labs/Projects 40%

Quizzes 10%

Exams 30%

Students and Parents can use Synergy to track academic progress. Late work will be accepted until two weeks prior to the end of the semester. Exam retakes will be handled on an individual basis.