

Physics I Honors Syllabus

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Expectations:

- **Demonstrate Love Towards God and Towards Others**

Jesus answered, “The foremost is, ‘Hear, O Israel! The Lord our God is one Lord; and you shall love the Lord your God with all your heart, and with all your soul, and with all your mind, and with all your strength.’ The second is this, ‘You shall love your neighbor as yourself.’ There is no other commandment greater than these.” Mark 12:29-31

- **Be Accountable**

Bear one another’s burdens, and thereby fulfill the law of Christ. For if anyone thinks he is something when he is nothing, he deceives himself. But each one must examine his own work, and then he will have reason for boasting in regard to himself alone, and not in regard to another. Galatians 6:2-4

- **Be Fearless to Do Your Best**

Whatever you do in word or deed, do all in the name of the Lord Jesus, giving thanks through Him to God the Father. Colossians 3:17

Course Description:

Physics is the introductory science to the high school student. This foundational science will cover topics that range from motion and forces, fluids and thermodynamics, electricity and magnetism, waves and optics, to atomic and nuclear physics. This course of study will challenge the student to predict, observe, and explain using critical thinking skills and develop understanding through discovery and scientific reasoning. Therefore, physics will utilize guided inquiry and student-centered learning to foster the development of critical thinking skills. The entire course of study will have an emphasis and devotion to the deep understanding of each topic.

Laboratory:

The laboratory is a crucial part of the Physics course since this is the place where students will learn about the behavior of matter with “hands-on” qualitative and quantitative observations. Students are engaged in hands-on laboratory work, integrated throughout the course, which accounts for 25 percent of the course. The laboratory is a vital part of this course that will assist in the hands-on learning of the physical world through making observations, recording and analyzing quantitative data, and communicating conclusions through these results.

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Textbook, Virtual Websites, and Websites for Study Guides:

Fullerton, D. (2011). *Honors physics essentials: An aplusphysics guide*. Webster, NY: Silly Beagle Productions.

Honors Physics (n.d.). Retrieved from http://www.aplusphysics.com/courses/honors/honors_physics.html

PhET: Free online physics, chemistry, biology, earth science and math simulations. (n.d.). Retrieved from <http://phet.colorado.edu/>

Physics. (n.d.). Retrieved from <http://mrayton.com/>

Homework:

Students will complete weekly homework assignments found on www.mrayton.com utilizing the Honors Physics Essentials book by D. Fullerton. Students will read pages specified in Honors Physics Essentials book. Questions labeled TQ will be questions about the text students read. These TQ's can be answered in one word, one phrase, or a complete sentence. Questions labeled CQ are conceptual questions and must be answered in complete sentences. Questions labeled QQ's are quantitative questions and the equation, substitution with units, and solve with units must be shown on your paper. CQ's and QQ's will be similar to the questions found in the Honors Physics Essentials textbook. Each homework assignment will be due on Friday of each week.

Tests:

Free response and multiple choice tests will be administered at the end of each unit of study. Tests will cover content knowledge in a cumulative fashion to assess student understanding. Tests will be graded with the use of a rubric. Students will have to apply mathematical and physical scientific knowledge to solve problems set forth over the knowledge set forth in the course of study.

Grading Scale:

50% - Tests

25% - Classwork (Notebook, Lab Reports)

25% - Homework Student

Materials:

Scientific Calculator

Dry-Erase Markers

Safety Glasses

Pencil/Pen

Notebook

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Topics of Study:

Unit	Topic of Study	Time Frame	Big Topic
1	Kinematics	3 weeks	I – Newtonian Mechanics
2	Dynamics	3 weeks	I – Newtonian Mechanics
3	Circular Motion and Universal Gravitation	2 weeks	I – Newtonian Mechanics
4	Work, Energy, and Power	2 weeks	I – Newtonian Mechanics
5	Momentum	2 weeks	I – Newtonian Mechanics
6	Fluid Dynamics	2 weeks	II – Fluid and Thermal Mechanics
7	Thermal Physics	1 weeks	II – Fluid and Thermal Mechanics
8	Electrostatics	2 weeks	III - Electricity
9	Circuits	2 weeks	III – Electricity
10	Magnetism	2 weeks	III – Electricity
11	Waves and Sound	3 weeks	IV – Waves and Optics
12	Light and Optics	4 weeks	IV – Waves and Optics
13	Modern Physics	3 weeks	V – Atomic and Nuclear Physics
14	Review	2-3 weeks	