



# Physics

PARENT NIGHT

Dr. Robert Ostrander (Doc O)

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## Welcome, Parents

**Course:** Physics

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*<http://www.nyostrander.us/Physics/PhysHome.html>*

**Text:** Welcher, Sharon H. *High Marks: Regents Physics Made Easy*, Forest Hills, NY:  
Sharon Welcher, 2016. Print

### Goals:

In this age of technology students should become as literate in the sciences as possible. Physics is especially good at helping students to see how mathematics applies to the way things work in the world around us. Some important life skills that physics develops are: communicating problem solving mathematically, ability to see and reason proportionally, analysis and interpretation of data, and the ability to explain scientific phenomena. The orderly nature of our universe becomes evident as we see how readily difficult problems can be solved by relatively simple mathematics. From a Christian standpoint, it is easy to understand that because a wise and orderly God made the universe it should be orderly instead of capricious.

### Curriculum:

The curriculum is centered on the Physical Setting / Physics core curriculum from NYSED, <http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/phycoresci.pdf> and the [High Marks: Regents Physics Made Easy](#) text by Sharon H. Welcher.

While this course is not a Regents class (there will be no Regents exam at the end of the year) we will follow the Regents curriculum because it prepares students well for college. There is a strong emphasis on mathematics and problem solving in physics. Curriculum topics include mechanics, motion, energy, electricity, waves and modern physics. Laboratory exploration is a required part of this course. Knowledge of basic algebra and trigonometry is required for the course.

# Physics: Core Curriculum

Syllabus for High Marks: Regents Physics Made Easy (Welcher, 2016)

Introduction .....	Unit 0
Mathematics Toolkit	
Mechanics .....	Chapter 1
Speed	
Acceleration	
Distance	
Graphing	
Vectors and Resultants	
Equilibria and Newton's Laws	
Projectiles (two dimensional motion)	
Gravity	
Momentum	
Energy .....	Chapter 2
Work	
Spring Constants	
PE KE and Internal Energy	
Pendulums	
Energy Conservation	
Energy Conversions	
Power	
Electricity and Magnetism .....	Chapter 3
Electrostatics and Coulomb's Law	
Electric fields and potential difference	
Conductivity and current	
Resistance	
Series and Parallel Circuits	
Circuit Diagrams	
Waves .....	Chapter 4
Longitudinal and Transverse	
Frequency, wavelength, and Doppler Effect	
Interference	
Reflection	
Refraction	
Diffraction	
Index of Refraction	
Electromagnetic spectrum	
Modern Physics .....	Chapter 5
Quantum theory and energy of a photon	
Atomic models and energy levels of hydrogen	
Einstein's theory ( $E=mc^2$ ), forces in the universe, and quarks and antiquarks	