Course Syllabus

Course Name:	Physics I
Description:	We stand on the shoulders of giants. Whether by observation, experimentation or brilliant insight, the progress of physics through the centuries has been advanced by scientific geniuses who wanted to know how things work. You'll find out for yourself when you take this course and visit "Physics World." In each "Physics World" module, you'll discover the contributions of geniuses like Galileo, Newton and Einstein. In their work, you'll learn the concepts, theories and laws that govern the interaction of matter, energy and forces. From tiny atoms to galaxies with millions of stars, the universal laws of physics are there for you to observe and apply. Using laboratory activities, videos, software, and websites, you'll follow in the footsteps of some of the world's greatest thinkers. This is a serious course that will make you think. It will also make you appreciate the beauty and importance of the science that governs our lives.
Prerequisites:	Algebra I; Algebra II recommended.
Estimated Completion Time:	2 segments / 32-36 weeks
Major Topics and Concepts:	Segment 1: • Learning Styles • Plagiarism, Libel, Slander • Theory vs. Law, Science vs. Pseudoscience • Measurement Techniques • Graphing Data using Graphical Analysis • Experimental Techniques • Lab Design • Average and Instantaneous Speed • Problem-Solving Methods • Vector and Scalar Quantities • Equation Manipulation • Average Velocity • Average Acceleration • Freefall • Mechanical Universe video - The Law of Falling Bodies • Newton's Laws • Mechanical Universe video - The Fundamental Forces • Newton's Law of Universal Gravitation • Coulomb's Law

- Mass and Weight
- Mechanical Universe video - The Apple and the Moon
- Free-body Diagrams
- Uniform Circular Motion
- Angular Momentum
- Projectile Motion

Segment 2:

- Temperature and Heat
- Conservation of Thermal Energy
- Kinetic and Potential Energy
- Work and Power
- Conductors and Insulators
- MUHSA Electrical Fields and Forces
- Simple Circuits
- Components
- Charge Motion
- Simple DC Circuits
- Capacitors
- Schematic Diagrams
- Series Circuits
- Parallel Circuits
- Simple Harmonic Motion
- Pendulum Equation
- Wave Components
- Mechanical Universe video - Waves
- Wave Equation
- Ray Diagrams
- Refraction
- Lenses
- Lens Equation
- Snell's Law
- Atomic Theory
- Elements of Physics: Matter - Atoms and Molecules
- Fundamental Particles
- Duality of Light
- Photoelectric Effect
- Strong Nuclear Force
- Radioactivity
- Nuclear Fission and Nuclear Fusion
- Special Relativity
- Cosmology

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