

Physics

Physics Curriculum Overview

The Physics curriculum emphasizes a more complex understanding of experimentation, the analysis of data, and the use of reasoning and logic to evaluate evidence. The use of mathematics, including algebra and trigonometry, is important, but conceptual understanding of physical systems remains a primary concern. Students build on basic physical science principles by exploring in-depth the nature and characteristics of energy and its dynamic interaction with matter. Key areas covered include force and motion, energy transformations, wave phenomena and the electromagnetic spectrum, light, electricity, fields, and non-Newtonian physics. The curriculum stresses the practical application of physics in other areas of science and technology and how physics affects our world.

There is continued focus on student growth in understanding the nature of science. This scientific view defines the idea that explanations of nature are developed and tested using observation, experimentation, models, evidence, and systematic processes. The nature of science includes the concepts that scientific explanations are based on logical thinking; are subject to rules of evidence; are consistent with observational, inferential, and experimental evidence; are open to rational critique; and are subject to refinement and change with the addition of new scientific evidence. The nature of science includes the concept that science can provide explanations about nature, can predict potential consequences of actions, but cannot be used to answer all questions.

Physics Curriculum Framework

The Science Vertical Team has revised the Physics Science Curriculum Matrix for 2009-2010. In addition to the necessary correlation to the Virginia Science Standards of Learning, the Physics content is organized by both concepts and topics. We encourage you to utilize this document while planning for instruction.

 [ACPS Physics Curriculum Matrix.pdf](#)

Adopted Instructional Resources

The honors level textbook for Physics I is *Physics* (5th Edition) by Cutnell and Johnson. This is a popular and challenging text used by both colleges and high schools. For additional support, visit the [Companion Student Site](#) .

Advanced Physics I students use *Holt Physics* (2002) published by Holt, Rinehart, and Winston (HRW). For additional support, visit the [Support Web site](#).

Students enrolled in standard Physics I use the very popular *Conceptual Physics* textbook published by Prentice-Hall. For additional support, visit [cpSurf](#)

Physics II (Advanced Placement) students use *College Physics* by Serway and Faughn. Raymond Serway is Professor (Emeritus) of Physics at James Madison University. Serway and Faughn also wrote *Holt Physics* that we currently use in Physics I (Advanced). For additional support, visit the [Companion Web Site](#)