Physics offers a curriculum that emphasizes students' understanding of fundamental physics concepts while helping them acquire tools to be conversant in a society highly influenced by science and technology.

The course provides students with opportunities to learn and practice critical scientific skills within the context of relevant scientific questions. Topics include the nature of science, math for physics, energy, kinematics, force and motion, momentum, gravitation, chemistry for physics, thermodynamics, electricity, magnetism, waves, nuclear physics, quantum physics, and cosmology.

Scientific inquiry skills are embedded in the direct instruction, wherein students learn to ask scientific questions, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science.

Throughout this course, students are given opportunities to understand how physics concepts are applied in technology and engineering. Practice activities provide additional opportunities for students to apply learned concepts and practice their writing skills. Exploration activities challenge Honors students to deconstruct scientific claims, analyze scientific articles, and suggest follow-up experiments or topics for further research. Finally, Project activities allow Honors students to use scientific process skills to delve deeper into topics.

This course is built to state standards, the American Association for the Advancement of Science (AAAS) Project 2061 benchmarks, and the National Science Education Standards (NSES).

Length: Two Semesters

Unit 1: Introduction to Physics

- Math in Physics
- Math for Motion
- Introduction to Physics Wrap-Up

Unit 2: Energy

- Energy and Forces
- Conservation of Energy
- Doing Science: Energy
- Energy Wrap-Up

Unit 3: Electricity and Magnetism

- Electricity
- Electrical Circuits

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- Magnetism and Electromagnetism
- Doing Science: Electricity and Magnetism
- Electricity and Magnetism Wrap-Up

Unit 4: Energy Consumption and Resources

- Introduction to Energy Resources
- Energy Consumption and Climate Change
- Energy Resources and Sustainability
- Doing Engineering: Energy Consumption and Resources
- Energy in the Universe Wrap-Up

Unit 5: Semester Wrap-Up

Unit 6: Dynamics

- Force and Motion
- Calculations with Forces
- Doing Science: Dynamics
- Dynamics Wrap-Up

Unit 7: Momentum and Gravitation

- Momentum
- Harmonic Motion
- Planetary Physics
- Doing Science: Collisions
- Momentum and Gravitation Wrap-Up

Unit 8: Waves

- Introduction to Wave Motion
- Sound and Light
- Light Technology
- Doing Science: Evaluating Scientific Claims
- Waves Wrap-Up

Unit 9: Cosmology

- Origins of the Universe
- Stars
- Our Solar System
- Doing Science: Modeling Nuclear Reactions
- Cosmology Wrap-Up

Unit 10: Semester Wrap-Up

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