



Brooklyn North Family Guide to High School Science

Biology • Earth & Space Science • Chemistry • Physics



Welcome to High School Science

Welcome to the **Brooklyn North Family Guide to High School Science**. Whether your child is just beginning high school or preparing for a Regents examination, families play an important role in supporting student success.

This guide was developed to connect Brooklyn North families with trusted resources that reinforce classroom learning, encourage scientific curiosity, and provide additional opportunities for practice and exploration at home.

Throughout this guide, you will find official curriculum resources, Regents preparation materials, interactive learning tools, virtual laboratories, family science activities, and enrichment opportunities aligned to the **New York State Science Learning Standards (NYSSLS)** and the **New York City Public Schools (NYCPS) science curriculum**.



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Document Guide

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Course at a Glance

What Will My Child Learn This Year?

The table below provides an overview of the major instructional units students explore during each New York City Public Schools high school science course. While schools may adjust the pacing slightly to meet student needs, the sequence below reflects the intended progression of the official curriculum.

A Quick Note on Labs

Science is a hands-on subject! Throughout the year, students participate in laboratory investigations that allow them to explore scientific concepts through experimentation, data collection, modeling, and engineering design.

To be eligible to take a New York State Regents Examination in science, students must successfully complete:

- **A minimum of 1,200 minutes of laboratory experiences** (hands-on and/or approved virtual experiences), and
- **The three required NYSED Investigations** for their specific Regents science course.

Learn More visit: [NYSED Science Laboratory Requirements FAQ](#)



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Life Science Biology

[Link to curriculum](#)

Approximate Timeline	Official Unit	Investigative Focus
September – October	Marathon Runner	Investigate how body systems work together to maintain homeostasis during exercise.
November – December	Humans vs. Bacteria	Explore infectious disease, antibiotic resistance, and natural selection.
January – February	Evolution of Sick Humans	Examine how genetics and evolution influence human health and disease.
February – March	Saving the Mountain Lion	Use genetics and evidence to investigate biodiversity and species conservation.
March – April	Food for All	Investigate ecosystems, energy flow, and sustaining food systems.
April – May	The Woolly Mammoth	Evaluate biotechnology, extinction, and engineering solutions.



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Earth and Space Science

[Link to curriculum](#)

Approximate Timeline	Official Unit	Investigative Focus
September – October	Discovering New Worlds	Explore what makes a planet capable of supporting life by investigating stars, our solar system, and planetary motion.
October – November	Probability of Life Elsewhere	Investigate Earth's history, the evolution of life, and the origins of the universe to evaluate the conditions that make life possible.
December	Unearthing Mars (Required NYS Investigation)	Apply Kepler's Laws and planetary motion to analyze evidence from Mars and deepen understanding of planetary motion.
December – January	Earthquakes, Volcanoes, and Tsunamis: Who's at Risk?	Investigate Earth's internal structure, plate tectonics, and natural hazards to explain how Earth's processes shape landscapes and affect human populations.
January – February	Climate Change	Examine evidence of past and present climate change and investigate how interactions among Earth's systems influence future climate.
March – April	More Hurricanes and Blizzards in NYC?	Investigate weather systems, severe storms, and the movement of energy through Earth's atmosphere to explain weather patterns and hazards.
April – May	Solutions for a Sustainable Future	Evaluate scientific evidence and engineering solutions that support the sustainable use of Earth's resources and protect the environment.



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NYSSLS Chemistry

[Link to curriculum](#)

Approximate Timeline	Official Unit	Unit Focus
September – October	C.1 Thermodynamics in Earth's Systems	Investigate how energy transfers through Earth's systems and how these processes influence climate, sea level rise, and coastal communities.
October – December	C.2 Structure & Properties of Matter	Explore the structure of matter and explain how the properties of materials influence natural phenomena, including lightning and electrical interactions.
December – February	C.3 Molecular Processes in Earth Systems	Investigate how the properties of substances, molecular interactions, and Earth's processes influence the materials needed to sustain life.
February – March	C.4 Chemical Reactions in Our World	Explore chemical reactions, acids and bases, and environmental chemistry to explain changes in natural systems and identify potential solutions.
April – May	C.5 Energy from Chemical & Nuclear Processes	Investigate chemical and nuclear energy transformations to evaluate fuels, transportation options, and their impacts on Earth and society.



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NYSSLS Physics

[Link to curriculum](#)

Approximate Timeline	Official Unit	Students Will Explore...
September – October	P.1 Energy Flow from Earth's Systems	How energy moves through electrical systems and how engineers design more reliable power systems for communities. Students investigate the 2021 Texas power crisis and propose solutions to improve energy reliability.
October – December	P.2 Energy, Forces, and Earth's Crust	How forces deep inside Earth shape earthquakes, volcanoes, and changing landforms, and how scientists use evidence to understand these processes.
December – February	P.3 Collisions and Momentum	How motion, momentum, and collisions explain vehicle safety and help engineers design safer transportation systems.
February – March	P.4 Meteors, Orbits, and Gravity	How gravity shapes planetary motion and how impacts from objects in space have influenced Earth's past and could affect its future.
April – May	P.5 Electromagnetic Radiation	How light and electromagnetic radiation are used in everyday life, how waves behave, and how radiation can be used safely in science, medicine, and technology.
May – June	P.6 Stars and the Big Bang	Why stars shine, how stars change over time, and what evidence helps scientists understand the history and evolution of our universe.



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Science At Home Learning Resources

Learning extends beyond the classroom! These free resources provide videos, simulations, interactive activities, and practice opportunities that help students deepen their understanding of science concepts.

Resource	Description	Link
Khan Academy	Video lessons, practice questions, and course review	Khan Academy Science
CK-12 Foundation	Interactive textbooks, adaptive practice, and simulations	CK-12 Foundation
PhET Interactive Simulations	Virtual science and physics laboratories	PhET Interactive Simulations
HHMI BioInteractive	Biology investigations, animations, and data activities	HHMI BioInteractive
NASA STEM Engagement	Earth science, astronomy, engineering, and space exploration	NASA STEM Engagement
ChemCollective	Virtual chemistry labs and guided activities	ChemCollective
The Physics Classroom	Physics tutorials, simulations, and practice	The Physics Classroom
ExploreLearning Gizmos	Interactive STEM simulations (available through many schools)	ExploreLearning Gizmos



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Keeping the Science Conversation Going at Home!

One of the best ways to support your child's learning is simply by talking about science. A few thoughtful questions can help students reflect on their learning, make real-world connections, and strengthen their scientific thinking. When students explain their thinking, use evidence to support ideas, and connect science to the world around them, they deepen their understanding and build the communication and critical thinking skills that are essential for success in school, college, and future careers.

Try asking:

About Their Learning

- What phenomenon or problem did you investigate today?
- What was the most interesting thing you learned?
- What surprised you during today's lesson?
- What question are you still thinking about?

About Scientific Thinking

- What evidence helped you reach your conclusion?
- Did your ideas change as you learned more? What changed your thinking?
- Was there more than one possible explanation? How did your class decide which one made the most sense?
- What was the most challenging part of today's investigation?

Making Real-World Connections

- How does today's lesson connect to something you've seen in everyday life?
- Have you noticed this concept outside of school before?
- Why do you think scientists study this topic?
- How could this science help solve a real-world problem?

Looking Ahead

- What are you excited to learn next?
- Is there a science career that connects to what you're learning?
- If you could investigate one question about today's topic, what would it be?



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Thank You for Partnering With Us

Your encouragement, curiosity, and conversations at home play an important role in your child's success. Together, we can inspire the next generation of scientists, engineers, healthcare professionals, innovators, and informed citizens.

Stay Connected

The learning doesn't stop when the school day ends!

Be sure to explore the **Brooklyn North District Science Newsletter** for:

- The latest district science news and opportunities
- Upcoming STEM events and competitions
- Family-friendly science experiences across New York City
- Museum exhibits, community events, and seasonal activities
- Resources and ideas to continue exploring science together at home

Whether you're visiting a museum, attending a local STEM event, or simply talking about science around the dinner table, every experience helps nurture curiosity and a lifelong love of learning.

Thank you for partnering with us to inspire scientific thinking—both in the classroom and beyond.