Forensic Science
Science

Key Instructional Activities

Science consists of a way of thinking and investigating, as well a growing body of knowledge about the natural world. To become literate in science, students need to possess sufficient understanding of fundamental science content knowledge, the ability to engage in the science and engineering practices, and to use scientific and technological information correctly. Technology should be infused into the curriculum and the safety of the student should always be foremost in instruction.

The Forensic Science Georgia Standards of Excellence are designed to build upon science concepts from previous courses and apply science to the investigation of crime scenes. Students will learn the scientific protocols for analyzing a crime scene, chemical and physical separation methods to isolate and identify materials, how to analyze biological evidence, and the criminal use of tools, including impressions from firearms, tool marks, arson, and explosive evidence.

The Science Georgia Standards of Excellence drive instruction. Hands-on, student-centered, and inquiry-based approaches should be the emphasis of instruction. The standards are a required minimum set of expectations that show proficiency in science.

HOUSTON COUNTY BOARD OF EDUCATION
HIGH-ACHIEVING STUDENTS

What resources are available for students and parents?

- ✓ Online Science Textbook
- ✓ Parent Portal
- ✓ Overview of Units and Pacing

Forensic Science Course Overview

Unit 1: Introduction to Forensics

Expected Dates: Beginning of School Year to End of August

Students will construct an explanation of how scientific forensic techniques used in collecting and submitting evidence for admissibility in court have evolved over time.

Unit 2: Crime Scene and Evidence Collection

Expected Dates: Beginning of September to Mid-September

Students will plan and carry out investigations using the scientific protocols for analyzing a crime scene (e.g., search, isolate, collect, and record). Students will construct an argument from evidence explaining the relevance of possible evidence at the site of an investigation. Students will develop models to analyze and communicate information obtained from the crime scene.

Unit 3: Fingerprints

Expected Dates: Mid-September to Beginning of October

Students will construct an explanation for utilizing the appropriate technique to lift and evaluate identifiable, latent, plastic and patent fingerprints.

Unit 4: Trace Evidence

Expected Dates: Beginning of October to Mid-November

Students will plan and carryout an investigation to determine the value of physical and trace evidence. Students will plan and carryout an investigation to analyze the morphology and types of hair, fibers, soil and glass evidence in order to make a physical match examination.

Unit 5: Handwriting, Forgery and Counterfeiting

Expected Dates: Mid-November to Mid-December

Students will use models for the evaluation of handwriting and document evidence. Students will analyze and interpret data to evaluate digital sources of evidence. Students will ask questions to determine the appropriate uses of chromatography and spectroscopy in evidence analysis.

Unit 6: Blood and Blood Spatter

Expected Dates: Beginning of January to Mid-January

Students will construct an explanation to distinguish the difference between human and animal blood. Students will plan and carry out an investigation to analyze the physics of bloodstain patterns.

Unit 7: DNA Fingerprinting

Expected Dates: Mid-January to End of February

Students will plan and carry out an investigation involving DNA processing and analysis.

Unit 8: Ballistics, Tool Marks and Impressions

Expected Dates: Beginning of March to Mid-March

Students will analyze and interpret data regarding impression evidence. Students will construct an explanation to support the significance of impression evidence in an investigation.

Unit 9: Death, Forensic Anthropology, Forensic Entomology

Expected Dates: Mid-March to Mid-April

Students will ask questions to identify various causes and mechanisms of death (blunt force trauma, heart attack, bleeding, etc.). Students will construct an argument based on evidence that pertains to the manner of death (natural, homicide, suicide, accidental, or undetermined). Students will use mathematics and computational thinking to explain post-mortem changes used to determine post-mortem interval (PMI): • Rigor mortis • Livor mortis • Algor mortis • Gastric contents. Students will analyze and interpret entomological data to evaluate the role insects play in decomposition and determining PMI. Students will plan and carry out an investigation to analyze height, sex, age, and race to develop an anthropological profile of the victim and potential perpetrator.

Unit 10: Toxicology

Expected Dates: Mid-April to Mid-May

Students will ask questions to investigate types of toxins, poisons, and drugs and their effects on the body. Students will analyze and interpret data to investigate the effects of blood alcohol content on the body.

Helpful Tips for Parents and Guardians

Believe that every child can be successful in science.

Science has led to the discovery of everything from gravity to medicine. Science is a way of understanding the world, a perspective, and a pattern of thinking that begins in the very early years. That is why parent involvement is so important in a child's science education.

Tips to Help Children Learn Science

Explore, explore, explore. See science everywhere. Always encourage your child to question their surroundings, and then discuss. Parents can take opportunities to ask, "What would happen if …?" questions or present brainteasers to encourage children to be inquisitive and seek out answers.

Lead family discussions on science-related topics. Dinnertime might be an ideal time for your family to have discussions about news stories that are science based, like space shuttle missions, severe weather conditions, or new medical breakthroughs. Over time, children will develop a better understanding of science and how it affects many facets of our lives. Movies and TV shows with science-related storylines are also great topics for discussion.

Encourage girls and boys equally. Many fathers might be inclined to fix a problem for a daughter without challenging her to find the solution on her own. Many girls are left out of challenging activities simply because of their gender. Be aware that both girls and boys need to be encouraged and exposed to a variety of subjects at a very early age.

Do science together. Children, especially elementary-age children, learn better by investigating and experimenting. Simple investigations done together in the home can bolster what your child is learning in the classroom. Check with your child's teacher on what your child is currently learning in class and what activities you can explore at home. There are also many books on the market and numerous websites that present ideas for investigations.

In addition to exploring and communicating as a family, it is important to invest in your child's willingness to learn. There are many programs available that are fun and interactive, helping them build a solid foundation in science.

From life sciences to environmental science, physical science to earth science, when children express interests in these subjects, encourage them and learn with them.

How You Can Support Your Child's Success?

Although Georgia's approach to teaching and learning K-12 science is different than the past, you can still actively support your child's success in the classroom.

1. Speak to your child's teacher(s) about how these important changes affect your school.
2. Ask your child's teacher thoughtful questions based on the information provided in this brochure.
3. Learn how you can help the teacher(s) reinforce classroom instruction at home.
4. Visit www.georgiastandards.org for more information.