

# Philosophy of Middle School Science

The Howard County Public School System (HCPSS) believes that an effective student-centered science program includes an approach to learning that engages students physically and cognitively in a rich and rigorous inquiry-driven laboratory program where students operate as “Student-Scientists.” The primary goal of the program is to develop substantive science literacy in all students. The program must provide students with opportunities to expand, change, enhance, and modify the ways in which they view the world. Teachers facilitate an environment that promotes students' thinking, honesty, curiosity, and questioning. Students will be empowered to express and share points of view, solve problems, and make decisions based on evidence.

As a human endeavor, science seeks to provide an explanation of phenomena occurring in the natural world. This endeavor merges three pillars: Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts.

- The Practices of Science and Engineering are activities in which professional scientists regularly engage and through which students effectively learn. Generally, these practices can be categorized as investigation, evaluation, and communication about the natural world.
- The Disciplinary Core Ideas represent the laws, principles, theories, concepts, and data that the scientific community recognizes as the most accurate and useful for explaining phenomena.
- The Crosscutting Concepts are big ideas of science that bridge disciplinary boundaries and have explanatory power in science and engineering. They provide students and scientists with an organizational framework to connect their knowledge.

Science questions all things, rejects the labeling of statements as unalterable, and opens itself to continual scrutiny and modification. It is a creative process, which serves to promote discovery and understanding. An ideal setting for discovery includes hands-on activities that provide for the active involvement of students. Science is a never-ending process of discovery, interpretation, and evaluation.

The curriculum shall provide a flexible program for the acquisition of knowledge and utilization of the scientific processes appropriate to the level of the student. The science curriculum and instruction presented to students in science classes must be differentiated to provide appropriate rigor and challenge for all learners. The middle school science curriculum is built around driving questions that set the context and impetus for learning. Teachers may tailor the depth to which students pursue solutions to these driving questions in order to meet the unique needs of the students in their classes. For example, students enrolled in G/T science classes should participate in a program that has a level of rigor and challenge appropriate for high ability learners. Other students may require instruction on content and skills that specifically addresses their learning needs. The ultimate goal is to guide all students to intelligent decision-making through the assimilation of scientific knowledge and the application of scientific inquiry.

Safety in the science classes is an ongoing part of the curriculum. However, there are safety objectives that are pertinent to specific grade levels. All teachers will include these specific grade level safety procedures as well as review procedures taught in previous years.

The HCPSS Middle School Science program is aligned with the Maryland State Curriculum in Science (<http://mdk12.org/instruction/curriculum/science/>) and includes learning opportunities that support the Maryland Environmental Literacy Standards (<http://news.maryland.gov/msde/environmentalliteracy/>). Maryland adopted the *Next Generation Science Standards* (<http://www.nextgenscience.org/>) in June 2013 with the goal of full NGSS implementation by 2017-18. Throughout the transition period, the HCPSS curriculum will reflect revisions from the state and the priorities defined with *Vision 2018: Fulfilling the Promise of Preparation* (<http://www.hcpss.org/vision/>).