

Foreword

The *Curriculum Documents* for high schools define for teachers those aspects of the curriculum, both core ideas and science practices, which are essential for all students to learn.

The concept of essential curriculum is relevant at all grade levels and all subject areas. The program areas of **art, career and technology education, educational technology, English, ESOL, family and consumer sciences, foreign language, guidance, health, mathematics, media, music, physical education, science, and social studies** are included as they are present throughout all school levels.

The curriculum of the Howard County Public School System:

- Is present in the *Essential Curriculum Documents* for a primary audience of teachers and administrators,
- Defines clearly what content and skills all students must know and be able to do,
- Is based upon subject area national standards, the Maryland College and Career Readiness Standards in Literacy and Mathematics, and the Maryland College and Career Next Generation Science Standards,
- Aligns with national, state, and local assessment programs, including the Maryland School Assessments and the Maryland High School Assessments, and
- Is supported by curriculum resources for the subject areas.

Notes for 2015-16

This curriculum reflects the Maryland State Curriculum for Science, which has been released to help schools, teachers, and students prepare for the Maryland High School Assessment in Biology and to meet the learning goals defined for high school science courses. Please note that the goals and objectives related to the skills and processes of science are grouped together into a document listed separate from the grade level content goals and objectives. Teachers are responsible for facilitating learning experiences for students that include these skills and processes *every year* and should intentionally integrate them throughout all of their lessons. It is through these skills and processes that students will most effectively construct a deep understanding of the content outlined in each grade level or course. Teachers should review their grade-level content goals and objectives throughout the year.

Maryland's College and Career Readiness Standards in Literacy and Mathematics apply throughout Science. Disciplinary literacy is evident within the Science and Engineering Practices, and

all students should be regularly engaged with complex texts relevant to the content under consideration. Complex texts come in many forms including data displays, photographs, audio recordings, and traditional informational text such as newspapers or journal articles. It is incumbent that students regularly engage with grade appropriate, complex text to support the writing of summaries, argument, and explanation. Practicing scientists devote approximately 50% of their professional time engaged in literacy activities, so it is consistent with science practice that students also regularly engage in literacy activities. Numerous instructional resources have been developed to assist teachers to select appropriate complex text and to engage students in meaningful learning from those texts.

The HCPSS Science Curriculum is aligned with the Maryland Environmental Literacy Standards. Students in high school fulfill Environmental Literacy requirements through completion of Earth Space Science and Biology.

Courses with G/T designation are to be differentiated for highly able/high achieving students. Teachers should ensure differentiated content objectives are noted, and students should have opportunities to conduct long-term investigations where they research complex topics or issues that lead to their creation of “new knowledge” or original solutions in a manner that is consistent with professionals in the discipline. Instructional practices should be appropriate to the cognitive needs of highly able/high achieving students. These should include the use of metacognitive strategies that meet students’ needs.

Universal design principals must be applied throughout the planning and execution of instruction in all science classrooms. Access for all students is to be accomplished by eliminating barriers to learning. In designing learning experiences, teachers should be mindful of including multiple and flexible means of representing the content and engaging the learner as well as offering options for students to express their learning. Numerous resources specific to science have been developed by teachers and placed within Canvas and Alfresco for teacher reference. Additional information related to Universal Design for Learning (UDL) is available at <http://marylandlearninglinks.org/950>.

Maryland State Board of Education adopted the Maryland College and Career-ready Next Generation Science Standards (NGSS) in June 2013. The Performance Expectations defined by NGSS describe the activities in which scientifically literate students should be able to engage successfully following learning. The pathway to the Performance Expectations is paved by rigorous learning experiences that blend the Practices of Science and Engineering with the Disciplinary Core Ideas and Crosscutting Concepts of Science. It is through student engagement with the Science and Engineering Practices that students will construct deep and lasting learning in each of the three disciplines of science: Earth/Space Science, Life Science, and Physical Science.