

Department of Legislative Services
Maryland General Assembly
2019 Session

FISCAL AND POLICY NOTE
First Reader

House Bill 985 (Delegate Rose, *et al.*)
Ways and Means

Public High Schools – Science Credit Requirement – Computer Science and
Computer Programming

This bill allows a student enrolled at a public high school to satisfy all or part of a requirement to earn credits in science by completing credits in computer science or computer programming. **The bill takes effect July 1, 2019.**

Fiscal Summary

State Effect: None. Expanding the type of courses that qualify for the science credit graduation requirement does not affect State finances.

Local Effect: None. Local school systems can allow a student to satisfy a State or local science requirement using existing resources.

Small Business Effect: None.

Analysis

Current Law/Background:

High School Diploma Requirements

With the advice of the State Superintendent of Schools, the State Board of Education must establish minimum requirements for issuing certificates and diplomas by public and private high schools. Local school systems may establish graduation requirements beyond the minimum requirements established by the board.

Public High School Diploma Requirements and Next Generation Science Standards

According to regulations, to be awarded a high school diploma, a student must be enrolled in a Maryland public school system and have earned a minimum of 21 credits in specified subjects as detailed in **Appendix – State Public High School Diploma Credit Requirements**. The regulations state that students must earn three credits of science which includes a laboratory component engaging in the application of the science and engineering practices, the crosscutting concepts, and disciplinary core ideas including earth/space science, life science, physical science (chemistry and physics), engineering, and technology, and aligned to the High School Maryland Integrated Science Assessment (HS MISA).

The HS MISA is aligned with the Maryland Next Generation Science Standards (MDNGSS) which were adopted by the State Board of Education in 2013. According to the State Board of Education graduation requirements published in the [Graduation Requirements for Public High Schools in Maryland](#) published in March 2019, beginning in the 2019-2020 school year, students must pass the HS MISA (or meet the assessment requirement in a specified alternative manner) in order to graduate.

According to the Maryland State Department of Education, computer science is neither lab-based nor is it aligned to MDNGSS. Therefore, computer science will not assist students in passing the HS MISA. In addition to being a high school graduation requirement, HS MISA is used to meet the high school science assessment required under the federal Every Student Succeeds Act and will be a component of the State accountability system.

Maryland High School Graduation Task Force

In October 2018, the Maryland High School Graduation Task Force convened by the State Superintendent of Schools produced their [final report](#). According to the task force, 29 states allow computer science credit to substitute for some mathematics credit, including Maryland. Four other states allow districts to determine if computer science will replace mathematics or science credits.

The task force recommended that the State board maintain the three credits in science as described in current regulations as a graduation requirement. The task force also recommended that computer science be allowed to be substituted for one credit of math. Current regulations states that AP Computer Science may fulfill a math credit toward graduation requirements. The task force also recommended that students who have not demonstrated competency in Algebra I should continue to take courses that develop Algebra I competencies.

The State board has not yet taken action on any of the task force's recommendations.

Higher Education Admissions Standards

According to University System of Maryland (USM) [policy](#), which was last updated October 2017, in general, the minimum qualifications for regular admission to a USM institution are (1) a high school diploma or its equivalent; (2) a high school grade point average of a C or better; (3) a score on a nationally standardized examination such as the SAT or ACT; and (4) achievement at the appropriate level of competencies in the core content associated with specified courses. A grade of a C or better in required courses normally demonstrates the minimum level of preparation for college-level work.

Each institution may admit, up to a maximum of 15% of its entering freshman class, students who do not meet the minimum qualifications outlined in the policy but who show potential for success in postsecondary education. Each institution must develop written guidelines concerning individual admission. For those instances in which applicants have not completed all of the required courses for admission, each institution must establish a method of assessment by which a student can demonstrate competence, equivalent to having passed a required high school course, to qualify for admission.

As shown in **Exhibit 1**, generally, to be admitted to a USM institution, a student must earn a grade of a C or better in three credits of biological or physical sciences. The courses completed must be in at least two different subject areas. Two of the three must include a laboratory experience. For students interested in Science, Technology, Engineering, or Mathematics (known as “STEM”) related careers (such as medicine, engineering, the sciences, veterinary medicine, physical therapy, etc.), four years of science are recommended in three different science areas, with three laboratory experiences.

St. Mary’s College of Maryland requires three years of science. Morgan State University requires three years of science or state-approved equivalent; two must be in different areas, with at least one lab experience. Community colleges are open enrollment institutions and do not have a science requirement.

Private institutions of higher education and public institutions of higher education in other states set their own admissions requirements.

Exhibit 1
High School Courses Generally Required for Admission to a
University System of Maryland Institution

<u>Subject</u>	<u>Year</u> <u>Courses</u>
English	4
Biological and Physical Sciences ¹	3
Social Science/History	3
Mathematics ²	4
Language other than English or in some instances an advanced technology language other than English ³	2

¹The courses completed must be in at least two different subject areas. Two of the three must include a laboratory experience. For students interested in Science, Technology, Engineering, or Mathematics (known as “STEM”) related careers (such as medicine, engineering, the sciences, veterinary medicine, physical therapy, etc.), four years of science are recommended in three different science areas, with three laboratory experiences.

²Must include Algebra I, Geometry, and Algebra II. Students who complete Algebra II prior to their final year must complete the four-year mathematics requirement by taking a course or courses that utilize nontrivial algebra. Nontrivial algebra is intended to mean that the level of mathematical concepts discussed and the level of problems that are used in the course would be at least as sophisticated as those that relate to problems appearing in the Achieve ADP Algebra II test. Examples of courses meeting this requirement include Algebra II, Trigonometry, Precalculus, Calculus and successor courses, Statistics, and College Algebra. An important feature of any such course is that it utilize algebra in a substantive way, so the student does not lose the algebraic and numerical skills achieved in earlier courses.

³The two units must be in the same language. American Sign Language is among the languages accepted. Students should consult the admissions office of the institution they are seeking to attend to determine if advanced technology electives are accepted in fulfillment of this requirement.

Source: University System of Maryland [policy](#); Department of Legislative Services

Additional Information

Prior Introductions: None.

Cross File: None.

Information Source(s): Maryland Association of Counties; Maryland State Department of Education; Baltimore City Public Schools; Anne Arundel County Public Schools; Montgomery County Public Schools; Talbot County Public Schools; University System of Maryland; Morgan State University; St. Mary's College of Maryland; Department of Legislative Services

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Appendix – State Public High School Diploma Credit Requirements

According to State regulations, to be awarded a high school diploma, a student must be enrolled in a Maryland public school system and have earned a minimum of 21 credits in specified subjects as detailed in **Exhibit 1**.

Exhibit 1 Distribution of Credits Required to Graduate High School

<u>Subject</u>	<u>Credits</u>
English	4.0
Fine Arts	1.0
Mathematics ¹	3.0
Physical Education	0.5
Health Education	0.5
Science	3.0
Social Studies	3.0
Technology Education	1.0
World Language <i>or</i> American Sign Language <i>or</i> Advanced Technology Education ²	2.0
Electives ²	3.0

Note: The credits must meet other requirements specified in the Code of Maryland Regulations. Elective programs and instruction must be developed at the discretion of the local school system, be open to enrollment for all students, and focus on in-depth study in required subject areas, exploration, or application and integration of what has been learned. In addition, all students must complete a locally designed high school program of environmental literacy approved by the State Superintendent of Schools.

¹However, beginning with students entering grade 9 in the 2014-2015 school year, each student must enroll in a mathematics course in each year of high school that the student attends, up to a maximum of four years of attendance, unless in the fifth or sixth year a mathematics course is needed to meet a graduation requirement.

²Alternatively, a student may successfully complete a State-approved career and technology program for four credits and one credit in an elective.

Source: Code of Maryland Regulations; Department of Legislative Services
