

Virginia Board of Education Agenda Item



Agenda Item: K

Date: November 20, 2014

Title	First Review of Proposed <i>Guidelines for the Use of Computer Science Courses to Satisfy Graduation Requirements</i> Developed in Response to House Bill 1054 of the 2014 General Assembly		
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Purpose of Presentation:

Action required by state or federal law or regulation.

Previous Review or Action:

No previous review or action.

Action Requested:

Action will be requested at a future meeting. Specify anticipated date below:

Date: January 22, 2015

Alignment with Board of Education Goals: Please indicate (X) all that apply:

	Goal 1: Accountability for Student Learning
	Goal 2: Rigorous Standards to Promote College and Career Readiness
X	Goal 3: Expanded Opportunities to Learn
	Goal 4: Nurturing Young Learners
	Goal 5: Highly Qualified and Effective Educators
	Goal 6: Sound Policies for Student Success
	Goal 7: Safe and Secure Schools
	Other Priority or Initiative. Specify:

Background Information and Statutory Authority:

Goal Three: The approval of these guidelines may expand options for students to apply rigorous computer science coursework as substitute coursework in meeting current graduation requirements in certain areas.

The 2014 General Assembly passed House Bill 1054 (Loupassi), which amended and re-enacted § [22.1-253.13:4](#) of the *Code of Virginia*. The amendment pertains to the use of computer science credits for high school diploma course and credit requirements, and the Virginia Board of Education is directed to develop guidelines addressing how computer science courses can satisfy graduation requirements. The specific amended language (in italics below) reads as follows:

Be it enacted by the General Assembly of Virginia:

1. That § [22.1-253.13:4](#) of the Code of Virginia is amended and reenacted as follows:

§ [22.1-253.13:4](#). Standard 4. Student achievement and graduation requirements.

D. In establishing course and credit requirements for a high school diploma, the Board shall:

8. Consider all computer science course credits earned by students to be science course credits, mathematics course credits, or career and technical education credits. The Board of Education shall develop guidelines addressing how computer science courses can satisfy graduation requirements.

The Virginia Department of Education conducted a review of existing options for computer science coursework and the role of this coursework in meeting graduation credits in mathematics, laboratory science, and career and technical education. Currently, Advanced Placement (AP) Computer Science is approved by the Virginia Board of Education as a mathematics course (standard credit); however, the AP assessment is not a substitute assessment for a mathematics verified credit. AP Computer Science has been historically grouped with mathematics courses due to the role of the high school mathematics endorsement in teaching those courses. In the area of career and technical education (since 2000), students scoring a three or above on the AP Computer Science examination earn the equivalent of a career and technical education credential. AP Computer Science has no parallel standing in the Board-approved laboratory sciences due to it not being a biological or physical science.

Summary of Important Issues:

The proposed guidelines were developed in response to the consideration of Board of Education-approved computer science coursework, which is, AP Computer Science. AP Computer Science has a recognized, standardized curriculum and a systematic professional development program for prospective teachers. A range of other computer-related courses exists as local electives and in the career and technical education technology and business application course offerings. These types of computer courses cover a spectrum of applications such as data-base management, game development, and networking.

The Department of Education also conducted a series of face-to-face and telephone interviews and a written survey with Virginia's two- and four-year colleges and universities admissions staff concerning the development of guidelines. The inquiry was conducted to determine what these officials thought to be the critical points that should be included in the Board of Education's guidelines. The overall response from higher education was that computer science would not be accepted as a substitute for current mathematics or laboratory science coursework requirements for admissions. Higher education generally felt that computer science had a place in college readiness but not at the expense of the mathematics or laboratory science coursework.

For the purpose of the development of the attached guidelines, it is proposed that the Board of Education define its consideration of computer courses as mathematics, laboratory science, and career and technical education to AP Computer Science and under specified conditions.

Due to 1) high school programs of study being in place for the current school year and 2) secondary course scheduling being underway across the Commonwealth for the 2015-2016 school year, it is also recommended that the Board of Education set the effective date for the implementation of the guidelines for students entering the ninth grade for the first time in 2015-2016.

Impact on Fiscal and Human Resources:

There is minimal impact on resources.

Timetable for Further Review/Action:

The proposed guidelines will be presented to the Board of Education for final review on January 22, 2015.

Superintendent's Recommendation:

The Superintendent of Public Instruction recommends that the Board of Education receive for first review the attached Proposed *Guidelines for the Use of Computer Science Courses to Satisfy Graduation Requirements*.

Proposed Guidelines for the Use of Computer Science Courses to Satisfy Graduation Requirements

Guidelines

Pursuant to House Bill 1054 (2014), Advanced Placement (AP) Computer Science may be considered a laboratory science course, a mathematics course, or career and technical education course under the conditions outlined below. A student may apply AP Computer Science coursework to only one of the aforementioned areas. These guidelines are effective for the students entering ninth grade for the first time in 2015-2016 and beyond.

- I. For **mathematics**, AP Computer Science is currently considered a mathematics graduation credit for the Standard Diploma and the Advanced Studies Diploma.
- II. For **science**, AP Computer Science coursework may be considered a laboratory science graduation credit under the following conditions:
 - A. For the **Standard Diploma**, students who have successfully completed the Virginia Board of Education-approved laboratory science courses, (i) Biology I **and** (ii) Chemistry I, Physics I, or an AP laboratory science, may apply successfully-completed AP Computer Science as one of three required laboratory science graduation credits.
 - B. For the **Advanced Studies Diploma**, students who have successfully completed the Virginia Board of Education-approved laboratory science courses, (i) Biology I, (ii) Chemistry I, **and** (iii) Physics I or an AP laboratory science, may apply AP Computer Science as one of four required laboratory science graduation credits.
 - C. For AP Computer Science to be applied as a laboratory science for either the Standard Diploma or the Advanced Studies Diploma, the course must include a significant experimental component where:
 1. a testable question is developed based on a review of literature;
 2. an hypothesis drives a sequential experimental design;
 3. parameters are manipulated under controlled conditions to test how variables behave;
 4. systematic methods of organizing derived experimental data are employed;
 5. analysis of data requires statistical processes to form conclusions; and
 6. conclusions and findings are formally presented, defended, and argued.

International Baccalaureate (IB) Computer Science coursework may be applied as laboratory science credit as part of the recognized IB diploma requirement, which is already governed under the 2012 *Regulations Establishing Standards for Accrediting Public Schools in Virginia* (SOA regulations).

² Courses completed to satisfy this requirement shall include course selections from at least three different science disciplines from among: earth sciences, biology, chemistry, or physics *or completion of the sequence of science courses required for the International Baccalaureate Diploma* (italics added.) The board shall approve courses to satisfy this requirement.
(http://www.doe.virginia.gov/boe/accreditation/soa_2012.pdf, page 14)

- III. For **career and technical education**, students who (i) successfully complete a career and technical education program sequence in programming or a related programming sequence **and** (ii) successfully complete the AP Computer Science examination with a score of three or higher, may substitute the examination for the student-selected verified credit when pursuing the **Standard Diploma** or **Advanced Diploma**.