**Virginia Department of Education (VDOE) Computer Science**

**School Counselor Computer Science FAQ**

**Revised June 2022**

**Computer Science Education**

Computer science has become increasingly more important within society, within the workforce, and thus within our education system. Thus, the mastery of computer science concepts, skills, and application is essential for all students.

Computer science is a separate academic discipline. The 2017 *Computer Science Standards of Learning* at the K-8 grade level were designed to support integrated computer science instruction within other discipline areas. Integration of computer science skills and concepts at the elementary and middle school grade levels ensures all students are provided a foundational understanding of computer science.

At the 6-12 grade level, computer science courses are provided to foster continued learning and expansion of computer science concepts, knowledge, and skills with opportunities to apply these skills to authentic problems. At the secondary level, Virginia students have two different routes to enroll in computer science coursework.

**Computer science courses include:**

AP Computer Science A - **10157**

AP Computer Science AB - **10158** (Course discontinued 2017)

AP Computer Science Principles - **10019**

Computer Science Foundations - **10012**

Computer Science Principles - **10011**

Computer Science Programming - **10152NCTE**

IB Computer Science - **10159**

Computer Mathematics- **02156**

Middle School Elective Computer Science Course - **10012MS**

*\*Elective credit unless there is an approved credit option.*

**Computer science foundational CTE courses include:**

Programming - **10152**

Advanced Programming - **10152**

Game Design and Development - **10205**

Advanced Game Design and Development - **10205**

Software Engineering Essentials–PLTW - **10015**

Software Engineering–PLTW - **10015**

*\*CTE or elective credit.*

*\*\*Virginia course SCED codes are aligned to the national SCED code database. It is imperative to check the VDOE website and the Master Schedule Collection periodically for SCED code updates.*

**Frequently Asked Questions**

**What is the difference between the Computer Science Programming – 10152NCTE (Non-CTE) and the CTE Programming – 10152 (6640/6641) course.**

The Computer Science Programming – 10152 NCTE course consists of 140 instructional hours and is aligned to the computer science programming standards of learning: <https://www.doe.virginia.gov/testing/sol/standards_docs/computer-science/2017/stds-compsci-prg.pdf>. \*CTE credit is not permitted.

The CTE Programming – 10152 course consists of 140 instructional hours aligned to the competencies outlined on the CTE Resource Center. This includes the workplace readiness and competencies listed in VERSO. <http://www.cteresource.org/curriculum/business-and-information-technology/Programming%206640.pdf>.

**Will there be licensure endorsements required to teach computer science at the elementary or middle school levels?**

Currently, there are no additional license endorsements required to teach integrated computer science at the K-8 level. Standalone courses at all grade levels should be taught by a highly-qualified educator who holds a computer science endorsement or an approved endorsement. Endorsement requirements are aligned to the standards and content within each course.

Please refer to the [course SCED code and endorsement document](https://docs.google.com/document/d/1CZ0QjbU1BkuPdFRq_jKkdmF0PP5zWvLMgbhNXw7LMuY/edit?usp=sharing). This document will be reviewed on an annual basis.

**What is the expectation for the instruction of the Computer Science Standards of Learning at the elementary level?**

As outlined in Section 8VAC20-131-70 of the Standards of Accreditation. The Standards of Quality state that each local school board shall develop and implement a program of instruction for grades kindergarten through 12 that is aligned to the Standards of Learning and meets or exceeds the requirements of the board.

The 2017 Computer Science Standards were designed for K-8 integration. School divisions are expected to integrate Computer Science standards into other subject areas where appropriate and teachers are expected to integrate the Computer Science standards into their lessons. Guidance on the integration of computer science will be provided through VDOE professional development opportunities and the ongoing development of instructional resources.

**Accountability and Assessment**

**How will school divisions be expected to demonstrate their Computer Science implementation for accreditation?**

8VAC20-131-70. Program of instruction and learning objectives.

*A. As required by the Standards of Quality, each local school board shall develop and implement a program of instruction for grades kindergarten through 12 that is aligned to the Standards of Learning and meets or exceeds the requirements of the board. The program of instruction shall emphasize reading, writing, speaking, mathematical concepts and computations, proficiency in the use of computers and related technology, computer science and computational thinking, including computer coding, and scientific concepts and processes;*

**Will the Computer Science Standards of Learning be tested using a state assessment?**

Currently, there are no state Computer Science assessments. Teachers are expected to teach and assess computer science skills within their classrooms using a variety of assessment approaches. The use of authentic problems and performance tasks provides opportunities for students to demonstrate and apply their knowledge of the 2017 *Computer Science Standards of Learning*.

**Will Computer Science questions appear on related SOL tests?**

Questions directly related to the 2017 *Computer Science Standards of Learning* will not appear on any state mandated and scored subject area assessment.

**Graduation Course Credit**

**Does the teacher endorsement determine the graduation credit option?**

A teacher endorsement is not indicative of the approved credit option for a computer science course. Please contact the Computer Science Coordinator for questions concerning endorsement eligibility.

**Will any of the new high school computer science courses be eligible for students to earn standard credits to meet graduation requirements in mathematics, science, or CTE?**

Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit, a science course credit, or a CTE course credit. The board shall approve courses to satisfy this requirement. Below is a chart that lists the existing computer science courses that currently satisfy these graduation requirements. All other computer science course credits earned by students will satisfy the elective course credit.

**Refer to the chart below to determine which courses could be used to meet graduation requirements in mathematics, science, or CTE.**

| Per the Standards of Quality, a computer science course credit earned by students may be considered a mathematics course credit. | Per the Standards of Quality, a computer science course credit earned by students may be considered a science course credit. | Per the Standards of Quality, a computer science course credit earned by students may be considered a CTE course credit. |
| --- | --- | --- |
| The BOE approved computer science courses include:Computer Mathematics – **02156**Advanced Placement Computer Science A – **10157** | The BOE approved computer science courses includeAdvanced Placement Computer Science A – **10157**\*IB Computer Science – **10159** | The courses below may be used as part of a CTE sequence\* to meet graduation requirements Programming – **10152**Advanced Programming – **10152**AP Computer Science A – **10157**AP Computer Science Principles – **10019** |

*The sequences for CTE coursework can be found in the Administrative Planning Guide (APG) at CTEResource.org.*

**Can Advanced Placement (AP) Computer Science Principles count as a mathematics or science credit?**

Advanced Placement Computer Science Principles is not a Board Approved course in which students can earn a mathematics or science credit toward high school graduation. A list of BOE approved courses can be found on the VDOE website within the *Board of Education Approved Courses to Satisfy Graduation Requirements for the Standard, Advanced Studies, and Modified Standard Diplomas in Virginia Public Schools* document.

Document Link: <https://www.doe.virginia.gov/instruction/graduation/approved-courses.docx>

**Can Computer Science Programming (10152NCTE) count as a math or science credit?**

Computer Science Programming – 10152NCTE is not a School Board Approved course in which students can earn a science credit toward high school graduation. A list of BOE approved courses can be found on the VDOE website within the *Board of Education Approved Courses to Satisfy Graduation Requirements for the Standard, Advanced Studies, and Modified Standard Diplomas in Virginia Public Schools* document.

Document Link: <https://www.doe.virginia.gov/instruction/graduation/approved-courses.docx>

**Can IB Computer Science count as a separate science discipline?**

In order to meet the laboratory science graduation requirements for a standard diploma, students must take three BOE approved laboratory science courses representing a minimum of two disciplines in science. In order to meet this requirement for an advanced diploma, students must take four BOE approved science courses representing three disciplines of science. The science disciplines include Biology, Chemistry, Earth Science, and Physics. Although AP Computer Science A and IB Chemistry can count toward a laboratory science credit, these courses do not meet the discipline requirements for science. A student still must have science coursework that reflects the minimum discipline requirements.

**What are available sequences of computer science that students may use to fulfill graduation requirements?**

The 2020 Standards of Quality indicate all students are required to complete two sequential elective courses chosen from a concentration of courses. Students may select from a variety of options based on their academic or career aspirations or based on personal interests. These sequential electives within a chosen concentration are intended to provide a foundation for further education or training or preparation for employment. Successful completion of any two computer science electives or completion of a CTE sequence meets the sequence elective requirement for graduation.

**Can Advanced Placement Computer Science A and/or Advanced Placement Principles count for the “Fine Arts or CTE” credit requirement for graduation?**

Yes, an approved computer science course credit earned by students may be used to meet the fine arts or career and technical education credit requirement.

**Can one of the new high school computer science courses that were made available in 2018 (Computer Science Foundations, Computer Science Principles, or Computer Science Programming) be used as part of a CTE sequential elective sequence when taken with one of the CTE computer science courses to meet graduation requirements?**

The new computer science course electives cannot be used as part of a CTE sequence. Within Verso, each CTE course has identified which courses are classified as concentration courses that can create a CTE sequence.

**Graduation Credit Accommodations-Special Population**

## **Credit Accommodation for World Language—Advanced Studies Diploma**

[**SB 323** **of** **2020**](https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+SB323)Permit a student who is pursuing an advanced diploma and whose individualized education program (IEP) specifies a credit accommodation for world language to substitute two standard units of credit in computer science for two standard units of credit in a world language. For any student that elects to substitute a credit in computer science for credit in world language, his or her school counselor must provide notice to the student and parent or guardian of possible impacts related to college entrance requirements.

**Approved Computer Science Courses**

AP Computer Science A - **10157**

AP Computer Science AB - **10158** (Course discontinued 2017)

AP Computer Science Principles - **10019**

Computer Science Principles - **10011**

Computer Science Foundations - **10012**

Computer Science Programming - **10152NCTE**

IB Computer Science - **10159**

*Career and Technical Education computer science-related courses*

Programming - **10152**

Advanced Programming - **10152**

Game Design and Development - **10205**

Advanced Game Design and Development - **10205**

Software Engineering Essentials–PLTW -**10015**

Software Engineering–PLTW – **10015**

\*This legislation allows for UP TO TWO credits of accommodation.  The number of credit accommodations allowed will be determined by the IEP team.  The team may decide that the best path for the student is:

* + no credit accommodation allowed, so the student must meet the designated requirement in world languages for an advanced diploma; or
	+ one credit accommodation allowed.  The student would then meet the world language requirement by having two credits in a world language and one credit in computer science; or
	+ two credit accommodations allowed.  The student would then meet the world language requirement by having one credit in world languages and two credits in computer science.

**If a student wants to have three years of World Languages on their transcript, are they able to count the credits that they received for taking APCSA and AP CSP in addition to one year of a World Language such as Spanish I?**

The World Language credit accommodation is only permitted for students who have it written within the IEP and are seeking an advanced studies diploma. The transcript will report the course name as the actual course taken.  The school counselor would note on their checklists for graduation requirements for that student that the world language requirement was met through credit accommodation so they know the requirement was met, but they cannot change the course names or categories on the transcript.

**English Language–World Language Substitution**

[**HB 443 of 2018**](https://lis.virginia.gov/cgi-bin/legp604.exe?181+sum+HB443)High school graduation requirements; substitution of computer coding credit for world (foreign) language credit. Requires the Board of Education, in establishing high school graduation requirements, to permit any English language learner who previously earned a sufficient score on an Advanced Placement or International Baccalaureate world (foreign) language examination or an SAT II Subject Test in a foreign language to substitute computer coding course credit for any world language course credit required to graduate, except in cases in which such foreign language course credit is required to earn an advanced diploma offered by a nationally recognized proverb of college-level courses.

**Approved Computer Science Courses - approved computer coding courses**

* AP Computer Science A - **10157**
* Computer Science Foundations - **10012**
* Computer Science Programming - **10152NCTE**
* IB Computer Science - **10159**
* Computer Mathematics - **2156**
* Programming - **10152**
* Advanced Programming - **10152**

**Instructional Resources for Educators**

**What additional resources are available to teachers?**

The computer science curriculum framework was developed to provide context, explain key vocabulary, and suggest integration opportunities for Computer Science concepts.

Computer Science Instructional Plans (CSIP) - are lesson plans created by educators to support the integration of computer science instruction in grades K-8. Upon review of these plans, they are made readily available on GoOpenVA.

Through the Advancing Computer Science Education grant, local school divisions and partnering institutions have developed instructional resources to support the implementation of the 2017 *Computer Science Standards of Learning*. These resources are made readily available upon development on GoOpenVA.

Additional instructional resources and professionals can be found through [CodeVA professional development](https://www.codevirginia.org/educators/professional-development/) webpage.

In addition, VDOE professional development opportunities will be available for teachers and administrators. Information on professional development opportunities will be communicated through Superintendent’s Memos and the VDOE website.

If you have questions or concerns about computer science education and the 2017 *Computer Science Standards of Learning*, please contact Keisha Tennessee (keisha.tennessee@doe.virginia.gov).