

HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: HB 1213 Computer Science Instruction
SPONSOR(S): Porter
TIED BILLS: None **IDEN./SIM. BILLS:** CS/SB 1056

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR or BUDGET/POLICY CHIEF
1) PreK-12 Innovation Subcommittee	10 Y, 0 N	Brink	Healy
2) PreK-12 Appropriations Subcommittee			
3) Education Committee			

SUMMARY ANALYSIS

Florida law requires school districts to provide students opportunities to participate in computer science education, including courses in computer programming and computer coding. However, only a small percentage of middle, high, and combination schools have students enrolled in computer science courses, including career and technical computer science courses.

To increase opportunities for students to participate in computer science instruction, the bill:

- defines computer science and includes computer coding and programming in the definition;
- requires the Florida Department of Education (DOE) to identify computer science courses in the Course Code Directory and on its website by July 1, 2018;
- establishes a progressive schedule by which school districts must offer computer science courses identified by the DOE so that at least 10 percent of a school district's total middle schools, high schools, and combination schools with grades 6-12 offer a computer science course by the 2020-2021 school year;
- specifies that school districts with fewer than 10 middle schools, high schools, and combination schools must have at least one school offer an identified computer science course by the 2020-2021 school year;
- requires Florida Virtual School (FLVS) to offer computer science courses so students enrolled in a school without a computer science course can receive computer science instruction;
- requires school districts to offer students access to computer science courses through FLVS or by other means;
- allows student enrollment in computer science courses offered by charter schools and FLVS to count toward a district's computer science course requirements;
- establishes a grant program to help teachers earn a computer science educator certificate or industry certification and for paying associated examination fees;
- establishes a bonus program to award qualifying teachers, on a yearly basis for up to 3 years, who teach computer science courses identified by the DOE;
- establishes a needs-based technology grant for school districts whose Digital Classrooms Allocation funds are insufficient to meet costs associated with the allocation and who have no remaining instructional materials; and
- requires the State Board of Education to adopt rules to implement these provisions.

Funding for the teacher training grant program, teacher bonus program, and needs-based technology grant is subject to appropriation. Therefore, the fiscal impact of the bill is indeterminate.

The bill takes effect upon becoming a law.

FULL ANALYSIS

I. SUBSTANTIVE ANALYSIS

A. EFFECT OF PROPOSED CHANGES:

Present Situation

Computer Science Instruction

Public schools are required to provide students in grades K-12 opportunities for learning computer science including, but not limited to, computer coding and computer programming.¹

Such opportunities may include:²

- instruction regarding computer coding in elementary and middle school;
- instruction to develop computer usage and digital literacy skills in middle school; and
- courses in computer science, computer coding, and computer programming in high school, including opportunities to earn industry certifications related to the courses.

The law allows high schools to provide students opportunities to satisfy certain math and science graduation requirements by taking computer science courses of sufficient rigor and earning a related industry certification.³ To qualify, the course must be in the area of computer science or 3D rapid prototype printing and the Commissioner of Education must identify the course and the related industry certification in the Course Code Directory.⁴

A qualifying computer science course may satisfy up to one mathematics or science course credit, so long as the course is not Algebra I or higher-level mathematics or Biology I or higher-level science. A qualifying 3D rapid prototype printing course may satisfy up to two mathematics course credits, except for Algebra I.⁵

The Southern Regional Education Board recently identified five actions states can take to help address gaps in computer science instruction. The steps are:⁶

- Develop state computer science standards for K-12.
- Lay the groundwork for learning computer science (focus on essential literacy skills and math concepts and skills students need to master grade-appropriate computer science standards).
- Create clear pathways to computing careers by charging a state advisory council with developing pathways that meet identified workforce needs in computing fields.
- Prepare great computer science teachers through special training and certification pathways.
- Educate communities about computer science and computing careers by embedding career advisement and encouraging partnerships with employers.

In 2016, the State Board of Education revised the Next Generation Sunshine State Standards to include K-12 computer science standards.⁷ Currently, courses in computer coding are listed in the Career Technical Education Program and Course Listing section in the Course Code Directory.⁸ The Florida Department of Education has identified several general education courses and career and

¹ Section 1007.2616(1), F.S.

² *Id.*

³ Section 1007.2616(3), F.S.

⁴ *Id.*

⁵ *Id.*

⁶ See Southern Regional Education Board, *Executive Summary: Bridging the Computer Science Education Gap: Five Actions States Can Take* (Nov. 2016), available at http://www.sreb.org/sites/main/files/file-attachments/csexec_summary.pdf.

⁷ See rule 6A-1.09401(1)(n), F.A.C.

⁸ Staff of the Florida Department of Education, *Staff Analysis of Senate Bill 468* (2016).

technical education and programs that will incorporate the newly adopted computer science standards, including but not limited to:⁹

- Computer Science Principles;
- Integrated Information Technology;
- Database Application Development and Programming;
- STEM labs K-5; and
- Meteorology Honors for Grade 9-12.

Currently, only 9.6 percent of high schools in the state have students enrolled in a computer science course, with 9.1 percent having students enrolled in a career and technical education computer science course. Under 1 percent of combination schools have students enrolled in a computer science course, and only 0.2 percent of combination schools have students enrolled in a career and technical education computer science course. Thirty-three school districts do not have a high school or combination school offering any type of computer science course. Only one school district, Bay, has a middle school that offers a computer science course.¹⁰

There are 463 teachers who hold a DOE-issued educator certificate in computer science.¹¹

Digital Classrooms Allocation

To support the efforts of public school districts and schools to integrate technology in classroom teaching and learning, provide student access to high-quality electronic and digital instructional materials and resources, and empower classroom teachers to help their students succeed, each school district receives digital classroom allocation funds as provided in the General Appropriation Act.¹²

Digital classroom allocation funds must be used for costs associated with:¹³

- acquiring and maintaining the items on the eligible services list authorized under the federal E-rate program;¹⁴
- acquiring computer and device hardware and associated operating system software that comply with minimum technology requirements identified by the DOE's Office of Technology and Information Services, including specifications for hardware, software, devices, networking, security, and bandwidth capacity and guidelines for the ratio of students per device;¹⁵ and
- providing professional development, including in-state conference attendance or online coursework, to enhance the use of technology for digital instructional strategies.

The 2017 Legislature appropriated \$80,000,000 for the digital classrooms allocation. Each district was allocated a minimum of \$500,000.¹⁶ Twenty percent of the funds may be used for professional development.

⁹ Florida Department of Education, *Course and CTE Programs that Include the New Computer Science Standards for the 2017-2018 School Year*, Memorandum DPS: 2017-26 (Mar. 3, 2017).

¹⁰ Email, Florida Department of Education, Office of Governmental Relations (Dec. 21, 2017).

¹¹ Email, Florida Department of Education, Office of Governmental Relations (Jan. 17, 2018).

¹² See s. 1011.62(12)(a), F.S. (as enacted by s. 4, ch. 2017-116, L.O.F.)

¹³ See s. 1011.62(12)(b)1.-3., F.S.

¹⁴ Universal Service Administrative Co., *Eligible Services List*, <http://www.usac.org/sl/applicants/beforeyoubegin/eligible-services-list.aspx> (last visited Jan. 16, 2018).

¹⁵ See s. 1001.20(4)(a)1.b., F.S. See also Florida Department of Education, 2017-2019 *Strategic Technology Plan* (Aug. 2, 2014) at 5, available at <http://www.fldoe.org/core/fileparse.php/5658/urlt/0097843-fdoedigitalclassroomsplan.pdf>.

¹⁶ See s. 6, ch. 2017-234, L.O.F. The remaining balance was allocated based on each school district's share of the total kindergarten through grade 12 unweighted FTE student enrollment. See Florida Department of Education, 2017-18 *Funding for Florida School Districts* (2017) at 19, available at <http://www.fldoe.org/core/fileparse.php/7507/urlt/Fefpdist.pdf>.

Bonuses for Teachers of Advanced Courses and Courses Leading to Industry Certification

The Legislature allocates public education funding to Florida's 67 school districts through the Florida Education Finance Program (FEFP). The FEFP is a funding formula that helps to equalize education funding among Florida's geographically diverse school districts and is the primary mechanism for funding the operating costs of Florida school districts, which among other things, includes the payment of teacher salaries.¹⁷ In addition to funding school district operating costs, the FEFP also includes funds for teachers of advanced courses, such as International Baccalaureate (IB) courses, Advanced International Certificate of Education (AICE) courses, and Advanced Placement (AP) courses, whose students earn specified scores on the course examinations.¹⁸

- *International Baccalaureate* bonus provides an IB teacher a \$50 bonus for each student who scores 4 or higher on the IB examination. An IB teacher in a "D" or "F" school who has at least one student scoring 4 or higher on the IB examination receives an additional \$500 bonus.¹⁹
- *Advanced International Certificate of Education* bonus provides an AICE teacher a \$50 bonus for each student in a full-credit AICE course, or \$25 bonus for a student in a half-credit AICE course, who scores "E" or higher on the AICE examination. An AICE teacher in a "D" or "F" school receives an additional \$500 bonus if one of the teacher's students scores "E" or higher on the full-credit AICE examination, or a \$250 bonus for each half-credit AICE course taught which has at least one student scoring "E" or higher on the half-credit AICE examination, not to exceed an additional \$500 bonus.²⁰
- *Advanced Placement* bonus provides an AP teacher a \$50 bonus for each of his or her students who scores 3 or higher on the College Board AP examination. An AP teacher in a "D" or "F" school who has at least one student scoring 3 or higher on the College Board AP examination receives an additional \$500 bonus.²¹

Yearly Teacher per-Student Bonuses by Advanced Course			
	IB	AP	AICE
Half Credit			\$25
Full Credit	\$50	\$50	\$50
Full Credit D Or F School	\$500 (per teacher)	\$500 (per teacher)	\$500 (per teacher)
Half Credit D Or F School			\$250 (per teacher)

FEFP funds are also used to provide bonuses for teachers who teach courses that lead to the attainment of a Career and Professional Education (CAPE) industry certification. Depending on the

¹⁷ See s. 1011.60, F.S. The performance salary schedule is funded from the same sources used to pay instructional personnel and school administrators under the grandfathered salary schedule.

¹⁸ Section 1011.62(1)(l)-(n), F.S.; *International Baccalaureate*, <http://www.ibo.org> (last visited Jan. 17, 2018); University of Cambridge, International Examinations, *Cambridge Advanced International Certificate of Education Diploma*, <http://www.cie.org.uk/qualifications/academic/uppersec/aice> (last visited Jan. 17, 2018); College Board, *Advanced Placement Program*, <http://www.collegeboard.com/student/testing/ap/about.html> (last visited Jan. 17, 2018).

¹⁹ Section 1011.62(1)(l), F.S. (2017)

²⁰ Section 1011.62(1)(m), F.S. (2017)

²¹ Section 1011.62(1)(n), F.S. (2017)

certification earned, a school district receives bonus funding of 0.1, 0.2, 0.3, 0.5, or 1.0 FTE.²² Teacher bonus funding is awarded for each student taught by a teacher who provided instruction in a course that led to the student’s attainment of a CAPE industry certification on the CAPE Industry Certification Funding List, as follows:

- A bonus in the amount of \$25 is awarded for a course with a weight of 0.1.²³
- A bonus in the amount of \$50 is awarded for a course with a weight of 0.2.²⁴
- A bonus in the amount of \$75 is awarded for a course with a weight of 0.3.²⁵
- A bonus in the amount of \$100 is awarded for a course with a weight of 0.5 or 1.0.²⁶

Yearly Teacher per-Student CAPE Bonuses		
Weight	Type	Amount
0.1 FTE	CAPE Industry Cert Does Not Articulate	\$25
0.2 FTE	CAPE Industry Cert Articulates to College Credit	\$50
0.3 FTE	CAPE Innovation Course ²⁷	\$75
0.5 FTE	CAPE Acceleration Industry Cert Articulates to 15-29 College Credit Hours ²⁸	\$100
1.0 FTE	CAPE Acceleration Industry Cert Articulates to 30+ College Credit Hours	\$100

Effect of Proposed Changes

The bill defines the term “computer science” to mean the study of computers and algorithmic processes, including their principles, hardware and software designs, applications, and their impact on society. The bill specifies that “computer science” includes computer coding and computer programming.

The bill specifies that opportunities for computer science instruction must include courses in computer science in both middle school and high school. Under the bill, computer science courses must be progressively integrated into each school district’s middle and high schools, including combination schools in which any of grades 6 through 12 are taught. Specifically, each school district must annually increase the percentage of the district’s total number of middle, high, and combination schools that provide at least one computer science course, as follows:

- at least 4 percent by the 2018-2019 school year;

²² Section 1011.62 (1)(o), F.S. (2017)

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ A CAPE Innovation course is one of up to five courses annually approved by the Commissioner of Education that combines academic career content and incorporates at least two third-party assessments that, if completed successfully by the student, articulate to college credit. *See* s. 1003.4203(5)(a), F.S. For a list of approved courses, *see* Florida Department of Education, *CAPE Innovation Courses*, <http://www.fldoe.org/academics/career-adult-edu/cape-secondary/innovation.stml> (last visited Aug. 24, 2017).

²⁸ A CAPE Acceleration industry certification is one annually approved by the Commissioner of Education that articulates to 15 or more college credits. *See* s. 1011.62(5)(b), F.S.

- at least 7 percent by the 2019-2020 school year; and
- at least 10 percent by the 2020-2021 school year.

The bill provides that a school district with 10 or fewer public middle, high, and combination schools must provide at least one computer science course in at least one middle, high, or combination school no later than the 2020-2021 school year.

The bill requires the Florida Department of Education (DOE) to identify computer science courses in the Course Code Directory that count toward the percentage thresholds. The DOE must identify the courses on its website no later than July 1, 2018.

The bill requires the Florida Virtual School (FLVS) to offer computer science courses identified by the DOE. If a school district does not offer an identified course, the district must provide students access to the course through the FLVS or through other means. Student enrollment in computer science courses offered by the FLVS may be used to satisfy the percentage thresholds.

The bill exempts charter schools from meeting the percentage thresholds but specifies that student enrollment in computer science courses offered by a charter school count toward the percentage thresholds for the sponsoring school district.

To encourage educators to earn credentials for teaching computer science, the bill establishes a bonus program, subject to appropriation. Under the program, a classroom teacher who is rated highly effective or effective pursuant to his or her evaluation in the previous school year, or who is newly hired but has not received an evaluation, must receive a bonus as follows:

- If the teacher holds an educator certificate in computer science or if he or she has passed the computer science subject area test and holds an adjunct certificate issued by the school district, the teacher will receive a bonus of \$1,000 after each year he or she completes teaching a computer science course identified by the DOE at a public middle, high, or combination school in the state, for up to 3 years.
- If the teacher holds an industry certification associated with a course identified by the DOE, the teacher will receive a bonus of \$500 after each year the individual completes teaching the identified course at a public middle, high, or combination school in the state, for up to 3 years.

A school district must report a qualifying classroom teacher to the DOE by a date and in a format established by the DOE. The bill specifies that an eligible classroom teacher will receive his or her bonus upon completion of the school year in which he or she taught the course but may not receive more than one bonus per year under the program.

Bonus funds under the program would be in addition to existing bonuses provided through the FEFP for teachers whose students who pass exams that lead to college credit (AP, IB, and AICE) or the attainment of an industry certification.

To help teachers earn a qualifying credential under the bonus program, the bill provides that, subject to appropriation, a school district or a consortium of school districts may apply to the DOE for funding to deliver or facilitate training for classroom teachers to earn an educator certificate in computer science or an industry certification associated with an identified course. The bill specifies that the funding may only be used to provide training for classroom teachers and to pay fees for examinations that lead to a qualifying credential.

The bill also requires the DOE, subject to appropriation, to award high-need technology grants to eligible school districts. To be eligible, a school district must show that its Digital Classrooms Allocation funds are insufficient to meet specified costs for the allocation and that it has no remaining instructional materials funds. Funding must be equitably distributed based on the geographic distribution of the student population among districts determined to have a high need for technology.

B. SECTION DIRECTORY:

Section 1. Amends s. 1007.2616, F.S.; providing a definition; providing requirements for specified instruction relating to computer science; requiring school districts to provide computer science courses in a specified number of schools by certain dates; requiring certain computer science courses to be included in the Course Code Directory and published on the Department of Education's website by a specified date; providing that student enrollment in certain courses offered by the Florida Virtual School meet specified requirements; providing that a charter school is not required to offer computer science courses; providing that charter schools that offer such courses may be used in meeting a school district's percentage thresholds; requiring the Florida Virtual School to offer certain computer science courses; requiring school districts to provide access to computer science courses offered by the Florida Virtual school or by other means under certain circumstances; providing funds for school districts to provide professional development for classroom teachers; providing Department of Education responsibilities for the distribution of such funds; requiring high school students to be provided opportunities to take certain courses to certain meet graduation requirements; providing funds for bonuses for certain classroom teachers; providing funding for high-need technology grants for school districts; requiring, rather than authorizing, the State Board of Education to adopt rules.

Section 2. Provides that the bill takes effect upon becoming a law.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

None.

2. Expenditures:

See Fiscal Comments, *infra*.

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

None.

2. Expenditures:

None.

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

None.

D. FISCAL COMMENTS:

Funding for the teacher training grant program, teacher bonus program, and needs-based technology grant is subject to appropriation. Therefore, the fiscal impact of the bill is indeterminate.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

None.

2. Other:

None.

B. RULE-MAKING AUTHORITY:

The bill requires the State Board of Education to adopt rules to implement the provisions of the bill and other requirements related to computer science instruction under s. 1007.2616, F.S.

C. DRAFTING ISSUES OR OTHER COMMENTS:

None.

IV. AMENDMENTS/ COMMITTEE SUBSTITUTE CHANGES

None.