HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: CS/HB 265 Computer Coding Instruction
SPONSOR(S): PreK-12 Quality Subcommittee; Porter; Williams and others
TIED BILLS: None **IDEN./SIM. BILLS:** SB 104

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR or BUDGET/POLICY CHIEF
1) PreK-12 Quality Subcommittee	14 Y, 0 N, As CS	Brink	Duncan
2) Education Committee	17 Y, 0 N	Brink	Hassell

SUMMARY ANALYSIS

The bill promotes student access to education in computer science and related fields by requiring the Articulation Coordinating Committee to develop recommendations that identify, among other things:

- high school courses in computer science, including computer coding and computer programming, which may be used to satisfy state university admissions requirements for math and science;
- gaps in current policy, curricula, programs, and practices that inhibit students from pursuing postsecondary education and careers in computer science and related fields; and
- common definitions for terms such as computer coding and computer programming so that stakeholders at all educational levels can use the terms clearly.

In addition, the bill requires the Commissioner of Education to establish academic standards for computer science, coding, and programming and identify high school-level courses that incorporate the standards in the Course Code Directory.

The bill requires the Department of Education to annually report to the Board of Governors and the Legislature:

- the courses identified in the Course Code Directory by the commissioner in accordance with the bill;
- the number of students, by district, including the Florida Virtual School, who are enrolled in a course identified in the Course Code Directory by the commissioner in accordance with the bill; and
- the number of individuals who hold a valid educator certificate in computer science or a related field.

The bill requires the State Board of Education to work with the Board of Governors and school districts to develop strategies for recruiting and supporting computer science teachers.

The bill does not appear to have a fiscal impact.

The bill takes effect July 1, 2017.

FULL ANALYSIS

I. SUBSTANTIVE ANALYSIS

A. EFFECT OF PROPOSED CHANGES:

Present Situation

Computer Science and Technology 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 state 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] As of March 3, 2017, the Florida Department of Education has identified several general education courses

[1] Section 1007.2616(1), F.S.
[2] Section 1007.2616(1), F.S.
[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).

and career and 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.

Articulation Coordinating Committee

The Articulation Coordinating Committee is an advisory body appointed by the Commissioner of Education in consultation with the Chancellor of the State University System.[10] The committee makes recommendations related to statewide articulation policies and issues regarding access, quality, and reporting of data to the Higher Education Coordination Council, the State Board of Education, and the Board of Governors of the State University System (BOG).[11] The committee comprises one member representing students and two members each representing:

- the State University System (SUS);
- the Florida College System (FCS);
- public career and technical education;
- K-12 Education; and
- nonpublic postsecondary education.[12]

The Office of K-20 Articulation, housed within the Department of Education, provides administrative support for the committee. Pursuant to the law, the committee helps to coordinate ways for students to move easily from one educational institution to another and from one level of education to the next. Accordingly, the committee must:

- monitor alignment between exit requirements and admissions requirements among education systems;
- propose guidelines for interinstitutional agreements for articulation of students among educational institutions;
- recommend dual enrollment and high school subject area equivalencies for state board and BOG approval;
- review the statewide articulation agreement and recommend revisions;
- review the statewide course numbering system, levels of courses, and the application of transfer credits to identify student transfer and admissions difficulties;
- publish courses that meet common general education and degree program prerequisite requirements;
- foster timely collection and reporting of data to improve the K-20 education performance accountability system;
- recommend roles and responsibilities of public education entities in interfacing with the computer-assisted student advising system; and
- make recommendations on the cost and requirements to develop and implement an online system for collecting and analyzing data relating to requests for transfer of credit by postsecondary education students.[13]

[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] Section 1007.01(3), F.S.
[11] *Id*.
[12] *Id*.
[13] *See* s. 1008.01(3)(a)-(i), F.S.

Effect of Proposed Changes

The bill amends the law to more closely align state policy to the Southern Regional Education Board's recommendations concerning computer science education.

The bill promotes student access to education in computer science and related fields by requiring the Articulation Coordinating Committee to develop recommendations that identify:

- high school courses in computer science, including computer coding and computer programming, which may be used to satisfy state university admissions requirements for math and science.
- common academic and technical skills needed for students to help meet projected labor market demands in computer science, information technology, and related fields in Florida.
- how middle and high school students, including underrepresented and nontraditional students, can be encouraged to pursue further studies and careers in computer science, information technology, and related fields.
- secondary course sequences which prepare students to succeed in postsecondary educational programs in computer science, information technology, and related fields.
- gaps in current policy, curricula, programs, and practices that inhibit students from pursuing postsecondary education and careers in computer science and related fields.
- appropriate educator qualifications and computer science pedagogy to maintain technologically current instructional knowledge and practices in teacher preparation programs.
- common definitions for terms related to computer science, including terms such as computer coding and computer programming, for consistent use across the Florida K-20 education system.

The committee must report its recommendations to the BOG and the Legislature by December 31, 2018.

The bill requires the Commissioner of Education to identify high school-level courses that incorporate the computer science standards in the Course Code Directory by June 30, 2018.

The bill requires the department to annually report to the BOG and the Legislature:

- the courses identified in the Course Code Directory pursuant by the commissioner in accordance with the bill;
- the number of students, by district, including the FLVS, who are enrolled in a course so identified; and
- the number of individuals who hold a valid educator certificate in computer science or a related field.

The bill requires the state board to consult with the BOG and school districts to develop strategies for:

- recruiting qualified teachers to provide computer science instruction;
- updating computer science educator certification requirements;
- providing appropriate professional development to maintain technologically current instructional knowledge and practices in the school districts; and
- identifying and streamlining traditional and alternative pathways toward computer science educator certification.

If a student enrolls in an identified course that satisfies any FCS or SUS admission requirements for mathematics, or science, the student may not know if the course would satisfy similar admission requirements at a private or out-of-state postsecondary institution. Accordingly, the bill requires the school district in such situations to notify the student that he or she should contact any out-of-state or private postsecondary institution to which the student is applying and inquire whether the course credit satisfies any of the institution's admissions requirements.

B. SECTION DIRECTORY:

Section 1. Amends s. 1007.01, F.S., requiring the Articulation Coordinating Committee to make recommendations related to computer science instruction; providing requirements for such recommendations; requiring the committee to report its findings and recommendations to the Board of Governors of the State University System and the Legislature; providing for expiration of certain committee duties.

Section 2. Amends s. 1007.2616, F.S., requiring the Commissioner of Education to develop certain standards and identify certain courses in the Course Code Directory; requiring the Department of Education to annually report certain information to the Board of Governors and the Legislature; requiring the State Board of Education, the Board of Governors, and school districts to develop strategies relating to computer science educator certification and teacher recruitment.

Section 3. Provides an effective date.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

   None.

2. Expenditures:

   None.

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

   None.

2. Expenditures:

   None.

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

None.

D. FISCAL COMMENTS:

None.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

   Not applicable.

2. Other:

None.

B. RULE-MAKING AUTHORITY:

None.

C. DRAFTING ISSUES OR OTHER COMMENTS:

None.

IV. AMENDMENTS/ COMMITTEE SUBSTITUTE CHANGES

On March 27, 2017, the House PreK-12 Quality Subcommittee adopted a proposed committee substitute and reported the bill favorably as a committee substitute. The proposed committee substitute differs from the originally filed bill by:

- deleting the bill's requirement that state universities and Florida College System institutions accept certain computer coding courses as satisfying foreign language admissions requirements;
- deleting the bill's provision expressly authorizing the Florida Virtual School to offer computer coding courses;
- requiring the Articulation Coordinating Committee to provide recommendations to the Board of Governors, the State Board of Education, and the Legislature that identify:
    - computer science courses, including computer coding and programming courses, which may be used to satisfy State University System admissions requirements in math and science;
    - common academic and technical skills needed for students to help meet projected labor market demands in computer science, information technology, and related fields in Florida;
    - how middle and high school students, including underrepresented and nontraditional students, can be encouraged to pursue further studies and careers in computer science, information technology, and related fields;
    - secondary course sequences which prepare students to succeed in postsecondary educational programs in computer science, information technology, and related fields;
    - gaps in current policy, curricula, programs, and practices that inhibit students from pursuing postsecondary education and careers in computer science and related fields;
    - appropriate educator qualifications and computer science pedagogy to maintain technologically current instructional knowledge and practices in teacher preparation programs; and
    - common definitions for terms related to computer science, including terms such as computer coding and computer programming, for consistent use across the Florida K-20 education system;
- requiring the Commissioner of Education to identify high school-level courses that incorporate the standards in the Course Code Directory;
- if a student is enrolled in an identified course that satisfies a specified postsecondary admissions requirement in Florida, requiring the school district to notify the student that he or she should contact any out-of-state or private institution to which they are applying to see whether the course satisfies any admissions requirements;
- requiring the Department of Education to annually report the number of individuals who hold a valid educator certificate in computer science or a related field; and
- requiring the State Board of Education to consult with the Board of Governors and school districts to develop strategies for recruiting computer science teachers, update certification requirements, provide professional development, and identify pathways toward computer science certification.