HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: CS/CS/HB 887   Computer Coding Instruction
SPONSOR(S): K-12 Subcommittee, Adkins
TIED BILLS: **IDEN./SIM. BILLS:**   CS/SB 468

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR or BUDGET/POLICY CHIEF
1) K-12 Subcommittee	12 Y, 0 N, As CS	Brink	Fudge
2) Education Appropriations Subcommittee	11 Y, 0 N, As CS	deNagy	Heflin
3) Education Committee			

SUMMARY ANALYSIS

The bill promotes student access to education in computer science and related fields by requiring the Higher Education Coordinating Council 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 foreign language, 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.
- 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 Florida Virtual School must offer the identified courses; school districts that do not offer an identified course must provide access to the course through the Florida Virtual School or through other means.

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.
- 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.

Providing the required administrative support and coordination necessary for the council to perform these additional responsibilities significantly increases the workload of the Office of Articulation. The bill appropriates one full-time equivalent position and associated salary rate and the sum of $79,326 in recurring general revenue finds to the Department of Education's Office of Articulation for these purposes. See fiscal comments.

The bill takes effect July 1, 2016.

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]

Currently, courses in computer coding are not approved by the State Board of Education as foreign language courses in the Course Code Directory. Rather, the courses are listed in the Career Technical Education Program and Course Listing section in the Course Code Directory.[6]

Foreign Language Instruction

Each district school board must "provide all courses required for middle grades promotion, high school graduation, and appropriate instruction to ensure that students meet the State Board of Education adopted standards" in reading and other language arts, mathematics, science, social studies, foreign languages, health and physical education, and the arts.[7]

Students are not required to earn credits in foreign language to graduate from high school with a standard high school diploma.[8] However, to earn the Scholar designation on the standard high school diploma, a student must earn two credits in the same foreign language.[9]

The Florida Department of Education is required to identify the competencies that students must demonstrate upon completing two credits of sequential high school foreign language instruction.[10]

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[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] Staff of the Florida Department of Education, *Staff Analysis of Senate Bill 468* (2016).
[7] Section 1003.42(1), F.S.
[8] Section 1003.4282(3), F.S.
[9] Section 1003.4285(1)(a)4., F.S.
[10] Section 1007.262, F.S.

Additionally, the law directs the department to identify in rule[11] the correlation between high school foreign language competencies and the competencies required of students in the FCS institutions' courses.[12] Based on this correlation, each FCS institution must identify the minimum number of postsecondary credits that students must earn to demonstrate a level of competence in foreign language equivalent to the competence of students who completed two credits of foreign language instruction in high school.[13]

The law authorizes alternative means of demonstrating foreign language competence. The department may specify means by which a student whose native language is not English may demonstrate proficiency in the native language.[14] A student who demonstrates proficiency in a native language other than English is exempt from the requirement to complete foreign language courses at the secondary level or FCS level.[15] The completion of a postsecondary course at the elementary level 2 in one foreign language or American Sign Language (ASL) is also considered to demonstrate the required foreign language competency.[16] Additionally, FCS institutions may determine other means by which students may demonstrate completion of foreign language competencies.[17]

A first-time-in-college student who is admitted to a state university is expected to demonstrate competency in a foreign language or ASL equivalent to the second high school level or higher (Spanish 2, French 2, etc.).[18] Students may also meet the foreign language admission requirement by demonstrating:[19]

- Competency at the elementary 2 level in one foreign language or ASL at an undergraduate institution;
- Equivalent foreign language based on Credit-by-Exam Equivalencies[20] adopted by the State University System (SUS) Board of Governors (BOG); or
- Equivalent foreign language or ASL competence through other means approved by the university.

Pursuant to its constitutional authority outlined under s. 1001.705, F.S., the Board of Governors has adopted regulations establishing baseline admissions requirements for the SUS. In addition, the Articulation Coordinating Committee (ACC) serves as an advisory board to the State Board of Education and the BOG on postsecondary transition issues.

The ACC reports to the Commissioner of Education and is comprised of the following members: two members each representing the SUS, the FCS, public career and technical education, public K-12 education, and non-public education, and one member representing students. Among other things, the ACC monitors the alignment between the exit and admission requirements of education systems and makes recommendations for improving transfer of students from one education system to another education system.

FCS institutions and the SUS do not recognize computer coding course credits as foreign language credits.

The Florida Virtual School

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[11] Rule 6A-10.02412, F.A.C. This rule adopted by the State Board of Education specifies the competencies that students must demonstrate upon successful completion of two credits of secondary instruction in one foreign language.
[12] *Id*.
[13] *Id*.
[14] Section 1007.262, F.S.
[15] *Id*.
[16] Rule 6A-10.02412, F.A.C.
[17] *Id*.
[18] Board of Governors Regulation 6.002(1)(h).
[19] *Id*.
[20] Florida Department of Education, *Articulation Coordinating Committee Credit-by-Exam Equivalencies*, *available at* http://www.fldoe.org/core/fileparse.php/5421/urlt/0078391-acc-cbe.pdf.

The Florida Virtual School (FLVS) offers tuition-free, online courses to all K-12 public, private, and home education students residing in Florida.[21] The FLVS is available to students in all of Florida's school districts.[22] At the beginning of each school year, district school boards must notify parents of high school students of the opportunity to take FLVS courses and options for early or accelerated high school graduation.[23]

School districts must provide students at all grade levels access to FLVS courses during and after the normal school day and through summer school enrollment.[24] High school students earn credit toward graduation for successful completion of high-school level FLVS courses,[25] and Florida law does not place limits on the number of credits that a student may earn through the FLVS.[26] For transfer purposes, credit for courses completed through the FLVS must be treated the same as courses listed in the Course Code Directory or courses offered by regionally accredited Florida public schools.[27] The FLVS may enter into franchise agreements with Florida district school boards to provide FLVS courses in grades K-12 at the district level.[28]

Higher Education Coordinating Council

The Higher Education Coordinating Council (HECC) was created by the Legislature in 2010 to identify unmet needs and to facilitate solutions to disputes regarding the creation of new degree programs and the establishment of new institutes, campuses, or centers.[29] The HECC must act as an advisory board to the Legislature, the State Board of Education, and the BOG. Recommendations of the HECC must be consistent with the following guiding principles:

- To achieve within existing resources a seamless academic educational system that fosters an integrated continuum of kindergarten through graduate school education for Florida's students;
- To promote consistent education policy across all educational delivery systems, focusing on students;
- To promote substantially improved articulation across all educational delivery systems;
- To promote a system that maximizes educational access and allows the opportunity for a high-quality education for all Floridians; and
- To promote a system of coordinated and consistent transfer of credit and data collection for improved accountability purposes between the educational delivery systems.[30]

The HECC includes the following members:

- One member of the Board of Governors, appointed by the chair.
- One member of the State Board of Education, appointed by the chair.
- The chancellor of the Florida College System.
- The chancellor of the State University System.
- The president of Enterprise Florida, Inc. or a designated member of the Stakeholder Council appointed by the president.
- The executive director of the Florida Association of Postsecondary Schools and Colleges.
- The president of the Independent Colleges and Universities of Florida.

[21] Florida Virtual School, *How is FLVS Free?, available at* http://www.flvs.net/Pages/default.aspx (last visited Jan. 20, 2016).
[22] Florida Virtual School, *Florida Virtual School 2013-14 Legislative Report* (2015)*, at 5, available at* https://www.flvs.net/docs/default-source/district/legislative-report-2013-14.pdf?sfvrsn=4.
[23] Section 1003.02(1)(i), F.S.
[24] Sections 1001.42(23) and 1003.498 F.S.
[25] Sections 1002.37(3)(a)1.-2. and 1001.42(23), F.S.
[26] Sections 1002.37(3)(c) and 1001.42(23), F.S.
[27] Florida Department of Education, *Memorandum: Florida Virtual School as a School Choice Option*, at 4 (Jan. 8, 2009), *available at* http://info.fldoe.org/docushare/dsweb/Get/Document-5250/dps-2009-007.pdf.
[28] Florida Department of Education, *Florida's K-12 Virtual Education Options Chart* (2015)*, available at* http://www.fldoe.org/core/fileparse.php/7509/urlt/2015-16-Options-Chart.pdf.
[29] Section 1004.015(1), F.S.
[30] Section 1004.015(3), F.S.

- The President of CareerSource Florida, Inc. or his or her designee.
- Three representatives of the business community: one appointed by the President of the Senate, one appointed by the Speaker of the House of Representatives, and one appointed by the Governor.

Appointed members serve on the HECC for two years and a single chair must be annually elected by the membership by a majority vote.[31]

Effect of Proposed Changes

The bill promotes student access to education in computer science and related fields by requiring the Higher Education Coordinating Council (HECC) 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 foreign language, 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 HECC must report its recommendations to the Board of Governors and the Legislature by December 31, 2017.

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 by June 30, 2017. The bill requires the FLVS to offer the identified courses and requires school districts that do not offer an identified course to provide access to the course through the FLVS or through other means.

The bill requires the department to annually report to the Board of Governors 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.
- 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 Board of Governors and school districts to develop strategies for:

- Recruiting qualified teachers to provide computer science instruction.

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[31] Section 1004.015(5), F.S.

- Updating computer science educator certification requirements.
- Providing appropriate professional development to maintain technologically current instructional knowledge and practices in the school districts.
- 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 foreign language, 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. 1004.015, F.S.; requiring the Higher Education Coordinating Council to make recommendations related to computer science instruction and identify certain items; requiring the Council to report its findings and recommendations to the State University System Board of Governors and the Legislature.

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 Florida Virtual School to offer certain courses identified by the Commissioner of Education and requiring school districts to provide students access to such courses; requiring the Department of Education to annually report certain information; requiring the State Board of Education, the State University System Board of Governors, and school districts to develop strategies relating to computer science educator certification and teacher recruitment.

Section 3. Providing an effective date of July 1, 2016.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

The bill does not appear to have a fiscal impact on state government revenues.

2. Expenditures:

See fiscal comments.

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

The bill does not appear to have a fiscal impact on local government revenues.

2. Expenditures:

The bill does not appear to have a fiscal impact on local government expenditures.

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

None.

D. FISCAL COMMENTS:

Currently, there are no resources specifically provided to the Office of Articulation, Florida Department of Education for the administrative support of the Higher Education Coordinating Council. The bill expands the responsibilities of the Higher Education Coordinating Council to include developing recommendations and reports, establishing academic standards, and working with the State Board of Education, the Board of Governors and school districts to prepare students for postsecondary education and careers in computer science, information technology and related fields.[32]

Providing the required administrative support and coordination necessary for the council to perform these additional responsibilities significantly increases the workload of the Office of Articulation. The bill appropriates one full-time equivalent position and associated salary rate and the sum of $79,326 in recurring general revenue finds to the Department of Education's Office of Articulation for these purposes.

The Department of Education will absorb reporting requirements within existing resources.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

   None.

2. Other:

   None.

B. RULE-MAKING AUTHORITY:

The bill would require the State Board of Education to update the Course Code Directory through the rulemaking process.

C. DRAFTING ISSUES OR OTHER COMMENTS:

None.

IV. AMENDMENTS/ COMMITTEE SUBSTITUTE CHANGES

On January 20, 2016, the K-12 Subcommittee adopted a strike all amendment and reported the bill favorably as a committee substitute. The strike all amendment:

- Requires the Higher Education Coordinating Council (HECC) to provide recommendations to the Board of Governors and the Legislature that identify:

  o High school courses in computer science, including computer coding and computer programming that may be used to satisfy state university admissions requirements for foreign language, math, and science.
  o 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.
  o 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.
  o Secondary course sequences which prepare students to succeed in postsecondary educational programs in computer science, information technology, and related fields.
  o Gaps in current policy, curricula, programs, and practices that inhibit students from pursuing postsecondary education and careers in computer science and related fields.

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[32] 2016 Agency Legislative Bill Analysis, Florida Department of Education, January 25, 2016

- o Appropriate educator qualifications and computer science pedagogy to maintain technologically current instructional knowledge and practices in teacher preparation programs.
  - o 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.

- 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.
- Requires the Florida Virtual School to offer the identified courses and requires school districts that do not offer an identified course to provide access to the course through the Florida Virtual School or through other means.
- 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 strike all amendment eliminates the bill's requirement that state universities and Florida College System institutions accept certain computer coding courses as satisfying foreign language admissions requirements. The amendment also eliminates the bill's requirement that districts develop and submit a computer coding curriculum plan.

This bill analysis is drafted to the bill as amended and reported favorably by the K-12 Subcommittee.

On February 9, 2016, the Education Appropriations Subcommittee adopted one amendment and reported the bill favorably as a committee substitute. The amendment appropriates one full-time equivalent position and associated salary rate and the sum of $79,326 in recurring general revenue finds to the Department of Education's Office of Articulation for the purposes of the bill.

This bill analysis is drafted to the bill as amended and reported favorably by the Education Appropriations Subcommittee.