



# OHIO LEGISLATIVE SERVICE COMMISSION

---

## Bill Analysis

Carrie Burggraf

### **Sub. H.B. 170\***

132nd General Assembly

(As Reported by H. Education and Career Readiness)

**Reps.** Carfagna and Duffey, Brenner, LaTourette, Reineke, Boggs

---

### **BILL SUMMARY**

- Requires the State Board of Education, by December 31, 2018, to adopt academic content standards and a model curriculum for computer science.
- Adds computer science instruction as an option to several of the prescribed subjects in the state minimum high school curriculum, but prohibits substitution for life sciences or biology courses.
- Permits a student to choose to apply instruction in computer science as one unit of math or science, regardless of the field of certification of the teacher who teaches the class, provided the teacher meets the bill's licensure requirements, as well as certain professional development requirements.
- Generally requires schools to employ only individuals who are licensed in computer science or hold a license endorsement in computer technology to teach computer science courses, but permits licensed individuals to teach such courses if the individual qualifies for a supplemental teaching license for computer science.
- Requires the State Board to establish rules for supplemental teaching licenses for computer science.
- Requires completion of an Advanced Placement computer science professional development program in order to teach Advanced Placement computer science.

---

\* This analysis was prepared before the report of the House Education and Career Readiness Committee appeared in the House Journal. Note that the list of co-sponsors and the legislative history may be incomplete.

- Authorizes school districts, educational service centers, community schools, and STEM schools to establish a computer science and technology fund to be used for specified purposes to support computer science programs and professional development.

---

## **CONTENT AND OPERATION**

### **Computer science standards and curriculum**

The bill requires the State Board of Education, by December 31, 2018, to adopt academic content standards and a model curriculum specifically for computer science in grades kindergarten through 12, including standards for introductory and advanced computer science courses in grade 9 through 12. The bill further directs the State Board, when developing the standards and curriculum, to consider recommendations from computer science education stakeholder groups, including teachers and representatives from higher education, industry, and Ohio and national computer science organizations.

The bill explicitly authorizes any school district or school to utilize the standards and curriculum, but prohibits any district or school from being required to utilize all or any part of the standards or curriculum.<sup>1</sup>

### **Computer science in the high school curriculum**

Current law prescribes 20 units of study in specified subject areas as the minimum high school curriculum for a diploma from a public school or a chartered nonpublic school. (Each unit is a minimum of 120 hours of instruction, except that for a laboratory course, one unit is a minimum of 150 hours of instruction.)

The bill adds computer science instruction as an option to several of the prescribed subjects in that curriculum. However, it specifies that, if a student chooses to substitute more than one computer science course to satisfy curriculum requirements, the courses must be sequential and progressively more difficult or cover different subject areas within computer science.

#### **Math**

The curriculum requires four units of math. Of these, one unit must be Algebra II, or its equivalent, or a career-based pathway math course for career-technical students. The bill adds advanced computer science as an alternative to Algebra II.

---

<sup>1</sup> R.C. 3301.079(A)(4).



However, if a student chooses to substitute advanced computer science for Algebra II, the school must communicate to the student that some institutions of higher education may require Algebra II for college admission purposes.<sup>2</sup>

## **Science**

Three units of science are required under the curriculum, including one unit each in physical science, life sciences, and advanced study in (1) chemistry, physics, or other physical science, (2) advanced biology or other life science, or (3) astronomy, physical geology, or other earth or space science. The bill adds computer science as a fourth option for the one unit of advanced study. However, it prohibits computer science from being substituted for any life sciences or biology course.<sup>3</sup>

### **Student choice of math or science credit for computer science**

The bill specifies that a student may choose to apply instruction in computer science as either one unit of math or one unit of science, regardless of the field of certification of the teacher who teaches the class, provided the teacher (1) meets the licensure requirements prescribed by the bill (see "**Qualification to teach computer science**," below), and (2) prior to teaching the course, completes a professional development program determined to be appropriate by the district board (or school governing authority in the case of other public schools and nonpublic schools).<sup>4</sup>

## **Electives**

Among the 20 required units are five (elective) units chosen from one or more of the following: foreign language, fine arts, business, career-technical education, family and consumer sciences, technology, agricultural education, a Junior ROTC program, or other English language arts, mathematics, science, or social studies courses. The bill specifies that for that purpose "technology" includes computer science.<sup>5</sup>

## **Alternative curriculum**

Certain students who enter ninth grade before July 1, 2016, may receive their high school diplomas without completing the standard requirements for graduation if they complete, instead, the slightly different 20 units of instruction and meet other conditions. That alternative curriculum also requires four units of math including

---

<sup>2</sup> R.C. 3313.603(C)(3).

<sup>3</sup> R.C. 3313.603(C)(5).

<sup>4</sup> R.C. 3313.603(N).

<sup>5</sup> R.C. 3313.603(C)(8).



"computer programming." The bill substitutes computer science for computer programming.<sup>6</sup>

### **Qualification to teach computer science**

For purposes of teaching computer science courses, the bill generally requires individuals to either (1) hold an educator license in computer science, or (2) a license endorsement in computer technology. However, the bill also authorizes districts to employ an individual who holds any valid educator license to teach computer science courses, so long as the individual qualifies for a supplemental teaching license.

Under the bill, in order to qualify for a supplemental teaching license, the individual must meet requirements established by rule of the State Board, which must include the following:

(1) The individual must pass a content examination in computer science in order to receive the supplemental license; and

(2) After at least two years of teaching computer science under the supplemental license, the individual must be permitted to advance to a standard educator license by completing a pedagogy course for the applicable grade levels. However, an individual may be exempt from this requirement if the individual has previously completed a pedagogy course for the applicable grade levels.<sup>7</sup>

### **Additional qualification to teach AP courses**

For the purpose of teaching Advanced Placement (AP) computer science courses, the bill requires individuals, in addition to the licensure requirements described above, to complete a professional development program provided by the College Board (the organization that creates and administers the AP program). The program may be completed at any time during the year.<sup>8</sup>

### **Computer science described**

The bill prescribes a definition for computer science to apply throughout the primary and secondary education code. It states that computer science means "logical reasoning, computing systems, networks and the Internet, data and analysis, algorithms and programming, impacts of computing, and structured problem solving skills

---

<sup>6</sup> R.C. 3313.603(D)(5)(b)(i)(II).

<sup>7</sup> R.C. 3319.236(A) and (B).

<sup>8</sup> R.C. 3319.236(C).



applicable in many contexts from science and engineering to the humanities and business."<sup>9</sup>

## Computer science and technology funds

For purposes of supporting computer science programs and professional development related to those programs, the bill authorizes the board of education of a school district, governing board of an educational service center (ESC), governing authority of a community school, and governing body of a STEM school to establish a computer science and technology fund, which may be used for any of the following:

- (1) Professional development related to computer science programs;
- (2) The delivery of online assessments, including instruction and data that support online assessment readiness;
- (3) Wireless connectivity in school buildings;
- (4) Network services, such as improving bandwidth capacity and filtering devices; and
- (5) The purchase of computers, tablets, and equipment.

The bill specifies that the fund may consist of (1) district or school moneys that legally may be used for that purpose and that are not otherwise designated, (2) private moneys donated to the district or school, and (3) any future state moneys allocated to the district or school for that purpose. The district or school also may use moneys in the fund to leverage or match additional private donations made to the school for that purpose.<sup>10</sup>

---

## HISTORY

ACTION	DATE
Introduced	03-29-17
Reported, H. Education & Career Readiness	---

H0170-RH-132.docx/ks

---

<sup>9</sup> R.C. 3301.012.

<sup>10</sup> R.C. 3314.0110, 3315.17, and 3326.082.

