

## 505-3-.62 COMPUTER SCIENCE ENDORSEMENT PROGRAM

**(1) Purpose.** This rule states field-specific content standards for approving endorsement programs that prepare individuals to teach computer science in grades 6-12 and supplements requirements in Rule 505-3-.01, Requirements and Standards for Approving Professional Education Units and Educator Preparation Programs.

### **(2) Requirements.**

(a) A state-approved professional education unit shall offer this field as an endorsement to an existing level 4 or higher professional teaching certificate in a secondary or P-12 certification field.

(b) The preparation program as described in program planning forms, catalogs, and syllabi, shall address the following standards:

1. The program shall prepare candidates who demonstrate proficiency in programming that requires the use of data abstraction to solve non-trivial programming problems.

(i) The program shall prepare candidates who perform laboratory-based activities that demonstrate programming proficiency in a modern high-level programming language.

(I) The program shall prepare candidates who demonstrate knowledge of and skill regarding the syntax and semantics of a high level programming language, its control structures, and its basic data representations.

(II) The program shall prepare candidates who demonstrate knowledge of and skill regarding common data abstraction mechanisms.

(III) The program shall prepare candidates who demonstrate knowledge of and skill regarding program correctness issues and practices.

(IV) The program shall prepare candidates who design, implement, and test programs of sufficient complexity to demonstrate knowledge and skills included in 1.i.i.

2. The program shall prepare candidates who demonstrate knowledge of how computer systems work individually and collectively.

(i) The program shall prepare candidates who effectively use a variety of computing environments.

(ii) The program shall prepare candidates who describe the operation of a computer system—CPU and instruction cycle, peripherals, operating system, network components, and application—indicating their purposes and interactions among them.

3. The program shall prepare candidates who demonstrate an understanding of data and information representation and organization at a variety of levels—machine level representation (for program correctness); data structures (for program implementation); problem representation (for solution design); files and databases (for general applications); and interactions among systems and people (for overall system design and effectiveness).

(i) The program shall prepare candidates who describe how data items are represented at the machine level.

(ii) The program shall prepare candidates who identify and provide usage examples of the various data structures and files provided by a programming language.

(iii) The program shall prepare candidates who describe elements (people, hardware, software, etc.) and their interactions within information systems (database systems, the Web, etc.).

4. The program shall prepare candidates who demonstrate skills and understanding relative to social aspects of computing that are appropriate for specialists and non-specialists.

(i) The program shall prepare candidates who demonstrate an understanding of computing and potential issues and skill at recognizing, researching, and analyzing issues to reach defensible conclusions.

(I) The program shall prepare candidates who analyze a variety of social issues related to the use of computers in society.

(II) The program shall prepare candidates who demonstrate an understanding of significant historical events relative to computing.

(III) The program shall prepare candidates who discuss enrichment activities for secondary computer science students.

5. The program shall prepare candidates who demonstrate an understanding of the teaching tasks and approaches and are able to apply and evaluate them with respect to the students in their computer science classes and apply methods and skills appropriate to the management of the secondary computer science classroom.

(i) The program shall prepare candidates who identify resources, professional organizations, strategies, activities, and manipulatives appropriate to teaching secondary computer science.

(ii) The program shall prepare candidates who plan direct instruction involving simultaneous use of computing facilities by students.

(iii) The program shall prepare candidates who plan instruction involving students independently using computing facilities.

[Authority O.C.G.A. § 20-2-200](#)