

Readopt with amendment Ed 507.54, effective 12-15-23 (Document #13822, Interim), to read as follows:

Ed 507.54 Computer Science Educator.

(a) A candidate seeking a credential as a computer science educator for grades K-12 shall meet the following education requirements:

(1) Either:

- a. Have at least a bachelor's degree; or
- b. Hold a current eligible industry-recognized credential as defined in RSA 200-O:2, II; and

(2) Meet the requirements of (c) below.

(b) Candidates seeking a credential shall use one of the alternatives in Ed 505.05 - Ed 505.07 after having met the requirements of (c) below.

(c) A candidate seeking a credential as a computer science educator for grades K-12 shall have the following skills, competencies, and knowledge through a combination of learning activities such as, but not limited to, academic and supervised clinical experience in the following areas:

(1) In the area of impacts of computing, the candidate shall have the ability to:

a. Use computing to:

1. Express creativity;
2. Solve problems;
3. Communicate;
4. Collaborate; and
5. Innovate in a variety of fields and careers;

b. Assess obstacles to equal access to computing as well as the impacts of these obstacles;

c. Assess impacts of computing innovations and practices with respect to:

1. Beneficial and harmful effects;
2. Ethical practices; and
3. Privacy, security, and legal issues; and

d. Keep current with knowledge on emerging technologies and their potential impacts;

(2) In the area of algorithms and computational thinking, the candidate shall have the ability to:

a. Analyze algorithmic processes and develop algorithms using:

1. Pattern recognition;
2. Problem decomposition; and

3. Abstraction;
 - b. Convert between binary, decimal, and hexadecimal number systems;
 - c. Use different fonts to represent, develop and analyze algorithms including, but not limited to natural language, flowcharts, and pseudocode;
 - d. Use heuristic solutions to address computing limitations including, but not limited to, time, space, and solvability;
 - e. Use standard algorithms including, but not limited to, searching and sorting algorithms and analyze implementations of those algorithms for correctness, efficiency, and clarity; and
 - f. Use simple recursive algorithms including, but not limited to, fractals, Zeno's paradox, and Towers of Hanoi;
- (3) In the area of programming, the candidate shall have the ability to:
 - a. Write and modify computer programs in block-based and at least one text-based programming language;
 - b. Analyze computer programs in terms of:
 1. Correctness;
 2. Usability;
 3. Readability;
 4. Extensibility;
 5. Modifiability; and
 6. Reusability;
 - c. Program using the following elements:
 1. Basic control structures;
 2. Standard operators;
 3. Variables and data types;
 4. Functions; and
 5. Data structures;
 - d. Write event-driven programs that respond to external events including, but not limited to, sensors, messages, and clicks;
 - e. Use libraries and APIs;
 - f. Use and evaluate multiple development and execution environments;
 - g. Facilitate collaboration in the development of software;

- h. Program user interactions with graphical and other user interface components;
 - i. Demonstrate knowledge of various software development models;
 - j. Model practices in software development, including:
 - 1. User requirements analysis;
 - 2. Program design;
 - 3. Implementation and documentation;
 - 4. Testing and debugging; and
 - 5. Evolution driven by feedback;
 - k. Develop object-oriented programs; and
 - l. Model the process of program compilation and interpretation;
- (4) In the area of data and analysis, the candidate shall have the ability to:
- a. Model concepts of processing data, including:
 - 1. Encoding;
 - 2. Compression; and
 - 3. Encryption;
 - b. Create and use models and simulations;
 - c. Work with data using computational tools, including to:
 - 1. Collect, aggregate, and generate;
 - 2. Store, manage, and manipulate; and
 - 3. Process, analyze, and visualize; and
- (5) In the area of computing systems and networks, the candidate shall have the ability to:
- a. Evaluate and compare computing systems using various criteria;
 - b. Evaluate and compare local, network, and cloud computing and storage;
 - c. Model computer networks in terms of:
 - 1. Protocol stack components; and
 - 2. Network protocols, such as:
 - (i) Transmission control protocol/internet protocol (TCP/IP);
 - (ii) Domain name servers (DNS); and

(iii) Hypertext transfer protocol secure (HTTPS); and

d. Demonstrate fundamental concepts of cybersecurity including, but not limited to, confidentiality, integrity, availability, non-repudiation, and authentication.

Appendix I

Rule	Statute
Ed 507.54	RSA 186:11, X (a); RSA 200-O:2, II; RSA 200-O:4, I