

277-278--- Computer Science K-8/5-12.

**b. Program requirements.** Applicants must hold a valid Iowa teaching license with at least one additional teaching endorsement.

**c. Content.** A minimum of 12 semester hours of computer science to include coursework in the following:

**(1) Data representation and abstraction to include primitive data types, static and dynamic data structures, and data types and stores.**

Course #	Course Title	Institution	Semester Hr.	Year Completed

**(2) Designing, developing, testing and refining algorithms to include proficiency in two or more programming paradigms.**

Course #	Course Title	Institution	Semester Hr.	Year Completed

**(3) Systems and networks to include operating systems, networks, mobile devices, and machine-level data representation.**

Course #	Course Title	Institution	Semester Hr.	Year Completed

**d. Methods course.** A content area methods course is required pursuant to 13.29(1). The course should include the following effective teaching and learning strategies for information technology:

**(1) Curriculum development** including recognizing and defining real-world computational problems; computing concepts and constructs; developing and using abstractions; creating, testing, and refining computational artifacts; and problem-solving strategies in computer science.

**(2) Project-based methodologies** that support active and authentic learning, fostering an inclusive computing culture, collaborative groupings, and opportunities for creative and innovative thinking.

**(3) Communication about computing** including multiple forms of media.

**(4) Digital citizenship** including the social, legal, ethical, safe and effective use of computer hardware, software, peripherals, and networks.

Course #	Course Title	Institution	Semester Hr.	Year Completed

**e. *Computer science specialist.*** If the requirements in 13.28(35) “c” and “d” are met and the applicant achieves a minimum of 24 semester hours of computer science content, a computer science specialist endorsement will be granted and the additional teaching endorsement set forth in 13.28(35) “b” will not be required.

**Graded field experience (if needed)**

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