Nebraska Computer Science and Technology Standards – Final Draft

The Computer Science and Technology Act (N.R.S. 79-3303) stipulates that computer science and technology includes, but is not limited to, knowledge and skills regarding: (1) computer literacy, (2) educational technology, (3) digital citizenship, (4) information technology, and (5) computer science. The following standards have been derived from existing course standards in Communication and Information Systems pathways to address these five concepts.

CS.HS.1 Demonstrate and describe best practices of computer literacy.

- CS.HS.1.a Interpret potential beneficial and harmful effects of computing innovations and emerging technologies, including artificial intelligence.
- CS.HS.1.b Identify and explain how hardware components and software applications meet the needs of the end user.
- CS.HS.1.c Demonstrate effective and efficient searches.
- CS.HS.1.d Select and use appropriate software to complete tasks in a variety of educational and professional settings.
- CS.HS.1.e Identify information technologies used in various industries and potential careers in those industries.

CS.HS.2 Analyze ethical practices and behaviors of digital citizenship.

- CS.HS.2.a Examine and evaluate cultural, social, and ethical issues associated with information technology.
- CS.HS.2.b Apply digital literacy by assessing the validity, accuracy, and appropriateness of information.
- CS.HS.2.c Describe how algorithms may result in both intentional and unintentional bias.
- CS.HS.2.d Investigate how applications of computing can have legal implications.
- CS.HS.2.e Evaluate safety and security measures for protecting information and managing digital footprints.

CS.HS.3 Apply concepts of information technology.

- CS.HS.3.a Identify and describe computing hardware components.
- CS.HS.3.b Perform operations on digital files stored on local devices and remote/cloud storage.
- CS.HS.3.c Compare and contrast the functions, features, and limitations of different operating systems and utilities.
- CS.HS.3.d Troubleshoot computer hardware and software.
- CS.HS.3.e Define components of computer networks.
- CS.HS.3.f Explain how data is sent through the Internet.
- CS.HS.3.g Interpret and draw conclusions based on a data set.

CS.HS.4 Analyze the fundamentals of cybersecurity.

- CS.HS.4.a Describe cryptography, encryption, and ciphers.
- CS.HS.4.b Identify methods to protect personal devices, information, and systems.
- CS.HS.4.c Compare and contrast federal, state, local, and international cybersecurity policies.

CS.HS.5 Apply concepts of computational thinking.

- CS.HS.5.a Define the term algorithm and explain its relationship to computational solutions.
- CS.HS.5.b Decompose a complex problem into distinct parts.
- CS.HS.5.c Identify and develop computational solutions to problems.
- CS.HS.5.d Define abstraction in terms of computer science and explain how it is used to manage complexity.
- CS.HS.5.e Represent equivalent data using different encoding schemes.

CS.HS.6 Implement programming literacy practices to create computational artifacts.

- CS.HS.6.a Predict the result or output of code execution.
- CS.HS.6.b Develop programs that use sequences of statements, variables, loops, and conditionals.
- CS.HS.6.c Design and develop computational artifacts that address personally- or socially relevant concerns.
- CS.HS.6.d Use abstraction to manage complexity or avoid duplication of effort.
- CS.HS.6.e Use existing procedures within a program or language based on documentation.
- CS.HS.6.f Write documentation describing the function of computational artifacts.