Standard Course of Study Alignment

Computer Science (2020)

Legend

●	The standard is clearly addressed by program activities.
-	This standard potentially could be addressed as part of *FIRST*® LEGO® League Discover either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

Grades 3-5

Concepts	Addressed
Computing Systems	
35-CS-01 Evaluate the features available on digital devices to perform a variety of classroom tasks.	-
35-CS-02 Model how computer hardware and software work together as a system to accomplish tasks.	-
35-CS-03 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.	-
Networks & The Internet	
35-NI-01 Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination.	-
35-NI-02 Explain your digital footprint and how personal information can be protected.	-
Data & Analysis	
35-DA-01 Identify the type of data encoded in a file based on file extension.	-
35-DA-02 Illustrate the process of file management and version control.	-
35-DA-03 Organize and present collected data visually to highlight relationships and support a claim.	●
35-DA-04 Communicate using data to highlight or predict outcomes.	●
Algorithms & Programming	
35-AP-01 Create multiple algorithms for the same task to determine which is the most accurate and efficient.	●
35-AP-02 Create programs that use variables to store and modify data.	●
35-AP-03 Construct programs that include sequences.	●
35-AP-04 Construct programs using simple loops.	●
35-AP-05 Construct programs that implement conditionals.	●
35-AP-06 Decompose problems into smaller, manageable, subproblems to facilitate the program development process.	●
35-AP-07 Modify, remix, or incorporate portions of an existing program into one's own work.	●
35-AP-08 Apply an iterative process to the development of a program by including diverse perspectives and considering user preferences.	●
35-AP-09 Give appropriate attribution when creating or remixing programs while respecting intellectual property rights.	-
35-AP-10 Identify and debug errors in an algorithm or program to ensure it runs as intended.	●
35-AP-11 Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.	●
35-AP-12 Describe choices made during program development using code comments, presentations, and demonstrations.	●
Impacts of Computing	
35-IC-01 Compare computing technologies that have changed the world and how they both influence and are influenced by cultural practices.	-

35-IC-02 Explore the tools that can be used to improve accessibility and usability of technology products for the diverse needs and wants of users.	-
35-IC-03 Seek diverse perspectives with collaboration for the purpose of improving computational artifacts.	-
35-IC-04 Exhibit positive digital citizenship and social responsibility in online interactions.	-
35-IC-05 Utilize public domain or creative commons media, and refrain from copying or using material created by others without permission.	-

Grades 6-8

Concepts	Addressed
Computing Systems	
68-CS-01 Understand the design of computing devices based on an analysis of how users interact with the devices.	-
68-CS-02 Design projects that combine hardware and software components to collect and exchange data.	-
68-CS-03 Systematically identify and fix problems with computing devices and components.	-
Networks & The Internet	
68-NI-02 Explain how physical and digital security measures protect electronic information.	-
68-NI-03 Explain permission and authorizations to access resources to computer systems online.	-
68-NI-04 Apply multiple methods of encryption to model the secure transmission of information.	-
Data & Analysis	
68-DA-01 Represent data using multiple encoding schemes.	-
68-DA-02 Collect data using computational tools.	-
68-DA-03 Transform the collected data to make it more useful and reliable.	-
68-DA-04 Refine computational models based on the data they have generated and/or data collected.	-
Algorithms & Programming	
68-AP-01 Implement flowcharts and/or pseudocode to address complex problems as algorithms.	●
68-AP-02 Create clearly named variables that represent different data types.	-
68-AP-03 Design and iteratively develop programs that combine control structures including nested loops and compound conditionals.	-
68-AP-04 Construct programs that include events.	-
68-AP-05 Organize problems and subproblems into parts.	●
68-AP-06 Explain the design, implementation, and review of programs.	●
68-AP-07 Create procedures with parameters to organize code and make it easier to reuse groups of instructions.	●
68-AP-08 Assess feedback from team members and users to refine a solution that meets user needs.	●
68-AP-09 Incorporate existing code and media into original programs and give attribution.	-
68-AP-10 Systematically test and refine programs using a range of test cases.	-
68-AP-11 Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.	●
68-AP-12 Document programs in order to make them easier to follow, test, and debug.	●
Impacts of Computing	
68-IC-02 Describe how equity, access, and influence impact the distribution of computing resources in a global society.	-
68-IC-03 Discuss issues of bias and accessibility in the design of existing technologies.	-
68-IC-04 Collaborate, model, and promote effective research strategies for assessing and evaluating innovative resources.	-
68-IC-05 Collaborate with many contributors to create a computational artifact.	-

68-IC-06 Utilize tools and methods for collaboration on a project to increase connectivity of peers.	-
68-IC-07 Examine the benefits and drawbacks of a digital footprint and online identity.	-
68-IC-08 Understand how online interactions make an impact on the social, emotional, and physical aspect of others.	-
68-IC-09 Compare tradeoffs between allowing information to be public and keeping information private and secure.	-
68-IC-10 Explore how laws and regulations impact the development and use of software.	-