

# Colorado High School CS Standards Alignment with Python with Robots Curriculum

Students can:	Unit 1	Unit 2	Unit 3	Unit 4
<b>Develop, utilize and evaluate algorithms to model and solve problems.</b>				
CS.HS.1.1a Identify and create different types of algorithms (sort, search, etc.).				
CS.HS.1.1b Predict the outcome of different types of algorithms.				
CS.HS.1.1c Create or adapt algorithms to solve problems for multiple purposes (e.g., personal interests, client needs).				
CS.HS.1.1d Use an algorithm that involves mathematical operations and functions to solve problems.				
CS.HS.1.1e Use an iterative approach to utilizing and/or developing an algorithm.				
CS.HS.1.1f Recognize problems that cannot be solved computationally.				
CS.HS.1.1g Identify and describe algorithms that exist within their personal lives.				
CS.HS.1.2a Identify and compare different algorithms that can be used to solve the same problem.				
CS.HS.1.2b Illustrate the flow of execution of an iterative algorithm (e.g., recursion).				
CS.HS.1.2c Explain the value of heuristic algorithms to model ways to solve problems.				
CS.HS.1.2d Adapt algorithms used in one problem to solve a related or different problem.				
CS.HS.1.2e Use multiple methods to represent an algorithm (e.g., diagram, programming language, unplugged).				
CS.HS.1.3a Describe pros and cons of the performance of algorithms for the same task.				
CS.HS.1.3b Use an iterative approach to developing an algorithm.				
CS.HS.1.3c Test and troubleshoot so that algorithms produce reasonable results.				
<b>Systematically analyze a problem using decomposition and abstraction to formulate a solution.</b>				
CS.HS.1.4a Demonstrate how the process of decomposition is iterative and used to solve problems.				
CS.HS.1.4b Formulate possible solutions based on the decomposition of a problem.				
CS.HS.1.5a Describe how abstraction is central to computational thinking.				
CS.HS.1.5b Identify and prioritize the most relevant parts of a problem while filtering out extraneous details.				
CS.HS.1.5c Demonstrate different ways to represent key problem components.				

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Students can:	Unit 1	Unit 2	Unit 3	Unit 4
Represent and analyze data in order to generate new knowledge and capability.				
CS.HS.1.6a Identify different types of data that are exchanged and produced by computers (e.g., protocols).				
CS.HS.1.6b Represent data using multiple encoding schemes (e.g., RGB, Hex, HSB, ASCII, Unicode).				
CS.HS.1.6c Evaluate the trade-offs for how data elements are organized and where data are stored (e.g., PNG/GIF, structured/unstructured).				
CS.HS.1.6d Compare and contrast various data structures/techniques for storing and processing data (e.g., arrays, lists, tables).				
CS.HS.1.7a Analyze computer programs to identify patterns within the program.				
CS.HS.1.7b Provide multiple versions of data visualization in order to deepen problem analysis.				
CS.HS.1.7c Interpret and analyze data to make informed decisions.				
CS.HS.1.8a Analyze computer output in different forms (e.g., plain text, CSV, graphs, images).				
CS.HS.1.8b Design visualizations using the appropriate tool(s) with the end user in mind.				
CS.HS.1.8c Provide multiple versions of data visualization in order to deepen problem analysis.				