



CodeHS: Arkansas Standards Alignment

The table below outlines the standards put forth in the Arkansas Essentials of Computer Programming course, and how CodeHS' [Introduction to Computer Science curriculum](#) maps to those standards.

Strand: Computational Thinking and Problem Solving
Content Cluster 1: Students will analyze problem-solving strategies.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS		
Level 1	Level 2	Assignment/Assessment
CSL1.1.1 Leverage problem-solving strategies to solve problems of level-appropriate complexity	CSL2.1.1 Leverage problem-solving strategies to solve problems of level-appropriate complexity	M1.L6: Top Down Design and Decomposition in Karel
NOTE: Some problem-solving strategies may include but are not limited to recursion, iteration, Agile method, 6-step engineering design process, and waterfall.		
CSL1.1.2 Compare and contrast multiple representations of problem-solving logic	CSL2.1.2 Analyze multiple representations of problem-solving logic	M1.L6 Handout: Planning Programs 1 M1.L9: For Loops in Karel M1.L10: If Statements M1.L11: If/Else Statements M1.L12: While Loops M1.L13: Control Structures Example M2.L9: If Statements M2.L10: For Loops M2.L12: While Loops M2.L13: Loop-and-a-Half
NOTE: Some representation methods may include but are not limited to documentation, backlog, sprints, decision matrix, design brief, flowchart, and pseudocode.		
CSL1.1.3 Analyze and implement collaborative methods in problem solving of level-appropriate complexity	CSL2.1.3 Analyze and implement collaborative methods in problem solving of level-appropriate complexity	M1.L16: Karel Challenges, Pair Programming Schoology: Coding Corner CodeHS Coding in the Wild



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NOTE: Some implementation methods may include but are not limited to paired programming, distributive (divide & conquer), and redundant parallel.

CSL1.1.4
Recognize processes and techniques for troubleshooting of level-appropriate complexity

CSL2.1.4
Recognize processes and techniques for troubleshooting of level-appropriate complexity

M1.L16: Karel Challenges

NOTE: Some processes and techniques for troubleshooting may include but are not limited to tracing; debugging; identification/removal of malware; and error-classification including syntax, logic, runtime, and off-by-one errors.

CSL1.1.5
Decompose a problem of level-appropriate complexity into more simple, solvable parts

CSL2.1.5
Decompose a problem of level-appropriate complexity into more simple, solvable parts

M1.L6: Top Down Design and Decomposition in Karel

NOTE for CSL1.1.5 through CSL4.1.5: Solvable parts may include but are not limited to methods, functions, and subroutines with and without parameters.

Strand: Computational Thinking and Problem Solving

Content Cluster 2: Students will analyze connections between elements of mathematics and computer science.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS.

Level 1	Level 2	Assignments/Assessments
CSL1.2.1 Interpret logical expressions using Boolean operators (e.g., AND, NOT, OR, XOR)	CSL2.2.1 Interpret logical expressions using short-circuit evaluation	M2.L6: Booleans M2.L7: Logical Operators
CSL1.2.2 Classify the types of information that can be stored as variables (e.g.,	CSL2.2.2 <i>Continuation of this standard is not specifically included or excluded</i>	M2.L2: Variables M2.L3: User Input M2.L16: Local Variables and Scope



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Booleans, characters, integers, floating points, strings)		
CSL1.2.3 Identify mathematical concepts (e.g., random number generation, vocabulary) related to computer science	CSL2.2.3 Recognize the similarities and differences between mathematics and computer science algorithms	Using Algorithms Handout, M1.L16: Karel Challenges
CSL1.2.4 <i>This standard is not specifically required until Level 2</i>	CSL2.2.4 Discuss the concept of abstraction	M1.L4: Functions in Karel M1.L5: The Start Function in Karel M2.L14: Functions and Parameters M2.L15: Functions and Return Values
CSL1.2.5 <i>This standard is not specifically required until Level 2</i>	CSL2.2.5 Perform simple operations with base ₁₀ , base ₂ , and base ₁₆ numbers	Base 1, 10 and 16
NOTE for CSL2.2.5 and CSL4.2.5: Some operations may include but are not limited to addition, subtraction, and conversion.		
CSL1.2.6 Demonstrate operator (e.g., +, -, /, %, concatenation) precedence in expressions and statements	CSL2.2.6 Demonstrate operator (e.g., math, pow, sqrt) precedence in expressions and statements	M2.L4: Basic Math in JavaScript
NOTE for CSL1.2.6 through CSL4.2.6: Some examples of operator precedence and assignment may include but are not limited to inside-out, order of operations, and $x = 1$ is not the same as $1 = x$.		

Strand: Data and Information

Content Cluster 3: Students will store and manipulate data through the use of computing devices.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS.		
Level 1	Level 2	Assignments/Assessments



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<p>CSL1.3.1 Define, store, and manipulate primitive data</p>	<p>CSL2.3.1 Define, store, and manipulate linear data</p>	<p>All of Module 2: Basic JavaScript and Graphics All of Module 3: Animation and Games M4.L16: Data Structures Challenges. All of Module 4: Basic Data Structures M4.L1: Intro to Lists/Arrays</p>
<p>NOTE for CSL1.3.1 through CSL4.3.1: Primitive data can include, but is not limited to, bool, char, double, float, int. Linear data can include, but is not limited to, arrays, lists, strings, vectors. Structured data can include, but is not limited to, arrays, classes, linked lists, multidimensional arrays, structs, user-defined classes. Objects can include, but are not limited to, constructors, data members, methods, pass-by-value/pass-by-reference parameters. Defining and storing can include, but are not limited to, modifiers such as final, private, protected, public. Manipulating data can include, but is not limited to, arranging (including stacking and queuing), casting, rearranging, sorting.</p>		
<p>CSL1.3.2 Compare and contrast level-appropriate numeric and non-numeric data representations</p>	<p>CSL2.3.2 Compare and contrast level-appropriate numeric and non-numeric data representations</p>	<p>M1.L16: Karel Challenges</p>
<p>NOTE for CSL1.3.2 through CSL4.3.2: Topics could include, but are not limited to, analog vs. digital, ASCII/Unicode, bar codes, compression, encoding, light/pixels, size of file vs. data types vs. storage needed, sound wave/sampling.</p>		

Strand: Data and Information

Content Cluster 4: Students will analyze and interpret data through the use of computing devices.

<p>THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS.</p>		
<p>Level 1</p>	<p>Level 2</p>	<p>Assignments/Assessments</p>



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<p>CSL1.4.1</p> <p><i>This standard is not specifically required until Level 2</i></p>	<p>CSL2.4.1</p> <p>Analyze the degree to which a computer model accurately represents an actual situation (e.g., Conway’s Game of Life, population growth, predator-prey)</p>	<p>Supplemental Materials for Intro to CS in JavaScript: Data Structures Challenge Problems (students should complete Data Structures before)</p>
<p>CSL1.4.2</p> <p>Examine the ability of computing technology to create and process Big Data</p>	<p>CSL2.4.2</p> <p>Determine an appropriate visual representation for given data</p>	<p>All of Module 4: Basic Data Structures</p>
<p>NOTE for CSL1.4.2 through CSL4.4.2: Visual representation tools may include, but are not limited to, spreadsheets, Google Analytics, Python libraries, and other programming language libraries.</p>		
<p>CSL1.4.3</p> <p><i>This standard is not specifically required until Level 2</i></p>	<p>CSL2.4.3</p> <p>Implement algorithms to perform data analysis (e.g., longest string, maximum, mean, minimum, range)</p>	<p>Using Algorithms Handout, M1.L16: Karel Challenges</p>

Strand: Algorithms and Programs

Content Cluster 5: Students will create, evaluate, and modify algorithms.

<p>THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS.</p>		
<p>Level 1</p>	<p>Level 2</p>	<p>Assignments/Assessments</p>
<p>CSL1.5.1</p> <p>Construct and evaluate simple expressions using relational and logical operators</p>	<p>CSL2.5.1</p> <p>Construct and evaluate compound expressions using relational and logical operators</p>	<p>Using Algorithms Handout, M1.L16: Karel Challenges</p>
<p>CSL1.5.2</p> <p>Design and implement algorithms</p>	<p>CSL2.5.2</p> <p>Design and implement algorithms that use sequence, selection, and iteration</p>	<p>M1.L9: For Loops in Karel M1.L10: If Statements M1.L11: If/Else Statements M1.L12: While Loops M1.L13: Control Structures Example</p>



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that use sequence and selection including nested ifs (e.g., if, if/else, if/else if, switch-case)	including nested loops (e.g., for, for each, while, do while)	M2.L9: If Statements M2.L10: For Loops M2.L12: While Loops M2.L13: Loop-and-a-Half
CSL1.5.3 Illustrate the flow of execution of a program including branching and looping	CSL2.5.3 Illustrate the flow of execution of an increasingly complex program including branching and looping	All of Module 2: Basic JavaScript and Graphics All of Module 3: Animation and Games M4.L16: Data Structures Challenges. M1.L9: For Loops in Karel M1.L10: If Statements M1.L11: If/Else Statements M1.L12: While Loops M1.L13: Control Structures Example M2.L9: If Statements M2.L10: For Loops M2.L12: While Loops M2.L13: Loop-and-a-Half
CSL1.5.4 Evaluate the qualities of level-appropriate algorithms	CSL2.5.4 Evaluate the qualities of level-appropriate algorithms	Comparing Algorithms Handout, M1.L16: Karel Challenges
NOTE for CSL1.5.4 through CSL4.5.4: Evaluation tools can include, but are not limited to, a code review and test cases. Qualities can include correctness, usability, readability, efficiency, portability, and scalability.		
CSL1.5.5 Utilize a systematic approach to detect structural and logic errors	CSL2.5.5 Utilize a systematic approach to detect structural and logic errors	M1.L16: Karel Challenges

Strand: Algorithms and Programs

Content Cluster 6: Students will create programs to solve problems.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS LEVELS.		
Level 1	Level 2	Assignments/Assessments



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<p>CSL1.6.1</p> <p>Create programs to solve problems of level-appropriate complexity applying best practices of program design and format (e.g., descriptive names, documentation, indentation, whitespace)</p>	<p>CSL2.6.1</p> <p>Create programs to solve problems of level-appropriate complexity applying best practices of program design and format (e.g., descriptive names, documentation, indentation, whitespace)</p>	<p>M2.L2: Variables M2.L16: Local Variables and Scope Entire Curriculum M1.L6 Handout: Planning Programs 1</p>
<p>NOTE for CSL1.6.1 through CSL4.6.1: Problems of varying complexity can include, but are not limited to, encoding, encryption, finding minimum/maximum values, identifying prime numbers, searching and sorting, and solving the Towers of Hanoi.</p>		
<p>CSL1.6.2</p> <p>Utilize functions/methods/procedures to input, output, and manipulate data with and without parameters</p>	<p>CSL2.6.2</p> <p>Determine the scope of variables declared in functions/methods/procedures and control structures</p>	<p>M2.L2: Variables M2.L16: Local Variables and Scope</p>
<p>NOTE for CSL1.6.2 through CSL4.6.2: In conjunction with standards CSL1.3.1 through CSL4.3.1, the goal is to introduce and implement object-oriented programming.</p>		
<p>CSL1.6.3</p> <p>Create a program that reads from standard input and writes to standard output</p>	<p>CSL2.6.3</p> <p>Create a program that reads from a file and writes to a file</p>	<p>M2.L2: Variables M2.L3: User Input</p>
<p>CSL1.6.4</p> <p><i>This standard is not specifically required until Level 4</i></p>	<p>CSL2.6.4</p> <p><i>This standard is not specifically required until Level 4</i></p>	

Strand: Computers and Communications

Content Cluster 7: Students will analyze the utilization of computers

Level 1	Level 2	Assignments/Assessments
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<p>CSL1.7.1</p> <p><i>This standard is not specifically required until Level 2</i></p>	<p>CSL2.7.1</p> <p>Characterize how software and/or hardware is used in industry (e.g., business, government, medical, military, sports)</p>	<p>CodeHS Coding in the Wild</p>
<p>CSL1.7.2</p> <p>Identify desired technical and soft skills (e.g., collaboration, communication, problem solving, teamwork) that can be enhanced by computer science</p>	<p>CSL2.7.2</p> <p>Discuss technical and soft skills honed by computer science</p>	<p>CodeHS Coding in the Wild</p>
<p>CSL1.7.3</p> <p>Discuss diverse careers that are influenced by computer science and its availability to all regardless of background</p>	<p>CSL2.7.3</p> <p>Analyze a historical timeline of computers and technology</p>	<p>History of Computing reflection</p>

Strand: Computers and Communications

Content Cluster 8: Students will analyze resilient, reliable, and adaptable communication methods and systems used to transmit information among computing devices.

Level 1	Level 2	Assignments/Assessments
<p>CSL1.8.1</p> <p>Utilize networks to perform level-appropriate tasks</p>	<p>CSL2.8.1</p> <p>Utilize networks to perform level-appropriate tasks</p>	<p>Session 3: Introduction to Network Technology 03.02 Internet Routing and Reliability</p>



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<p>CSL1.8.2 Discuss the role of internet service providers (ISP) in providing connectivity</p>	<p>CSL2.8.2 Discuss the hierarchical nature of networks, subnetworks, and the Internet</p>	<p>Session 3: Introduction to Network Technology 03.01The Internet Protocol (IP) and Domain Name Systems (DNS) , 03.02Internet Routing and Reliability</p>
<p>CSL1.8.3 Compare and contrast local area networks (LAN) and wide area networks (WAN)</p>	<p>CSL2.8.3 Identify various common topologies utilized in network implementations</p>	<p>Session 3: Introduction to Network Technology 03.08 LAN and WAN</p>
<p>CSL1.8.4 <i>This standard is not specifically required until Level 2</i></p>	<p>CSL2.8.4 Identify digital and physical methods used to secure networks</p>	<p>Session 3: Introduction to Network Technology 03.09 Safety First</p>
<p>CSL1.8.5 Identify common network protocols (e.g., DNS, HTTP/HTTPS, SMTP/POP/IMAP, Telnet/SSH)</p>	<p>CSL2.8.5 Compare and contrast common network protocols (e.g., DNS, HTTP/HTTPS, SMTP/POP/IMAP, Telnet/SSH)</p>	<p>Session 3:Introduction to Network Technology 03.02 Internet Routing and Reliability, 03.07 Internet and Network Protocols</p>

Strand: Computers and Communications

Content Cluster 9: Students will utilize appropriate hardware and software.

Level 1	Level 2	Assignments/Assessments
<p>CSL1.9.1 Compare and contrast computer programming paradigms and languages (e.g., text-based, visual, high-level, low-level, object-oriented)</p>	<p>CSL2.9.1 Compare and contrast the tradeoffs between compiled and interpreted languages</p>	<p>Not covered</p>
<p>CSL1.9.2 Discuss version control and Integrated Development</p>	<p>CSL2.9.2 Use the debugger in an IDE</p>	<p>Entire Karel module in the Intro course (Module 1: Programming with Karel the Dog)</p>



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Environments (IDE)		
CSL1.9.3 Classify layers of software (e.g., applications, drivers, operating systems) within various platforms	CSL2.9.3 <i>Continuation of this standard is not specifically included or excluded</i>	What is a Computer? Hardware and Software Basics
CSL1.9.4 Identify hardware components (e.g., input/output devices, internal organization of a computer, storage devices) of computing technology within various platforms	CSL2.9.4 <i>Continuation of this standard is not specifically included or excluded</i>	What is a Computer? Hardware and Software Basics

Strand: Community, Global, and Ethical Impacts

Content Cluster 10: Students will analyze appropriate uses of technology and its social and global impacts

Level 1	Level 2	Assignments/Assessments
<p>CSL1.10.1</p> <p>Categorize the risks associated with the utilization and implementation of digital technology</p> <ul style="list-style-type: none"> ● Legal ● Physical ● Psychological ● Social <p>NOTE: Legal issues include but are not limited to access, AFTRA, copyright, FAA, FCC, hacking, intellectual property, licensure, local computer-use policy, piracy, and plagiarism.</p>	<p>CSL2.10.1</p> <p>Discuss the effects associated with the use of social media (e.g., global communication, hiring, incarceration, termination)</p>	<p>Cybersecurity: Digital Citizenship and Cyber Hygiene</p>



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CSL1.10.2 Discuss issues related to personal security	CSL2.10.2 Identify components of a digital footprint (e.g., active and passive data) and the lasting impact	Cybersecurity: Digital Citizenship and Cyber Hygiene
CSL1.10.3 <i>This standard is not specifically required until Level 2</i>	CSL2.10.3 <i>Continuation of this standard is not specifically included or excluded</i>	