# Alabama Digital Literacy and Computer Science (Grade 7)

Middle School (75 Contact Hours)

## Course Overview and Goals

Alabama Digital Literacy and Computer Science (Grade 7) introduces students to core concepts in programming, cybersecurity, web design, and data science through hands-on activities. Students build coding skills with Karel the Dog and JavaScript while learning to use functions, loops, and conditionals to solve problems creatively. They also explore how the internet works, practice online safety and encryption concepts, and create projects such as websites, data analyses, and digital stories.

### Learning Environment

The course utilizes a blended classroom approach. The content is a mix of web-based and physical activities. Each module of the course is broken down into lessons. Lessons are composed of short video tutorials, interactive learning pages, quizzes, explorations, simulations, and free-response prompts.

### Technology Requirements

To complete all activities and exercises in this course, students must have access to the 3rd party sites and tools listed here: Alabama Digital Literacy and Computer Science (7th Grade) Course Links.

### Prerequisites

The Alabama Digital Literacy and Computer Science (Grade 7)  course is designed for complete beginners with no previous background in computer science. The course is highly visual, dynamic, and interactive, making it engaging for those new to computer science.

### More Information

Browse the content of this course at https://codehs.com/course/27992/overview

## Course Breakdown

### Module 1: Coding with Karel (2 weeks/10 hours)

Students learn the basics of programming by giving Karel the Dog commands in a grid world.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40188

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| Topics Covered | • Syntax<br>• Commands<br>• Debugging<br>• Looping<br>• Conditionals<br>• Comments<br>• Karel Challenges |
| Example Assignments | • Introduction to Karel<br>  ○ Write a program to have Karel move to each tennis ball, pick both up, and return to the purple dog house.<br>• If/Else Statements<br>  ○ Consider how this program works. Run the program and think about how the programmer may have created a flowchart to map out the choices Karel has to make.<br>• While Loops<br>  ○ Karel needs to stay inside the fenced area of the dog park. This program only moves Karel if there's no fence in front. This program also works in multiple dog park worlds.<br>• Karel Challenges<br>  ○ Using what you've learned about training Karel with code, it's your turn to put those skills in action! Karel may need to retrieve tennis balls, build bridges, or navigate through strange worlds. The following challenges will require you to call on your coding powers and use a combination of conditionals, for loops, while loops, and functions to help Karel. |

## Module 2: Exploring the Internet (2 weeks/10 hours)

Students are introduced to network protocols and different strategies used to protect online information.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40189

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| Topics Covered | • What is the Internet?<br>• The Need for Protocol<br>• Impact of the Internet<br>• Cybersecurity<br>• The CIA Triad<br>• Encryption<br>• Steganography |
| Example Assignments | • How Global Trends Shape Technology<br>  ○ Read how global trends shape technology, then click the green buttons below to see examples for each question.<br>• Encrypty/Decrypt |

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| | ○ Explore the following simulation to practice encrypting and decrypting a message using a key.<br>● Project: Steganography<br>○ In the following activity, you will see a picture and the corresponding color codes associated with the pixels. There is a message hidden in the first 12 pixels! Below is the method used to hide the message. Your mission will be to **reverse** the process and find the secret message! |

## Module 3: Cybersecurity Basics (3 week/15 hours)

Students explore key areas such as personal data collection, the reliability of online information, cyber ethics and laws, personal data security, cybersecurity essentials, and strategies to combat common cyber threats.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40190

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| Topics Covered | ● Digital Footprint and Responsibility<br>● Personal Data and Collection<br>● Can All Information Be Trusted?<br>● Cyber Ethics and Laws<br>● Personal Data Security<br>● Cybersecurity Essentials<br>● Cyber Attacks and Prevention<br>● Cyber Smarts Awareness |
| Example Assignments | ● Cyberbullying Case Study<br>○ The following is a case study of a potential cyberbullying scenario. Read the scenario. Then, use the information from your Cyberbullying Notebook to guide you as you answer the reflection questions.<br>● Is it Share Worthy?<br>○ Read through this infographic to learn what to look for to help decide if a website, video, or article you find online can be trusted as legitimate information.<br>● Ethics vs Laws<br>○ Complete the matching activity to practice recognizing the difference between ethics and laws.<br>● Cybersmarts Awareness Project<br>○ Create a Cyber Smarts Awareness project to teach your audience about your selected topic in digital citizenship or cybersecurity. You can select any of the topics covered in this unit. |

## Module 4: Exploring Computers (1 week/5 hours)

Students dive into the history of computing, consider how computing impacts today's world, and learn about the various parts that make up modern computers.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40212

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| Objectives / Topics Covered | • History of Computers<br>• Computers Speak Binary<br>• Configuring a Computer<br>• Future of Computing |
| Example Assignments / Labs | • Mission: Who Invented the Computer?<br>  ○ Over the next few activities, you will explore the question, “Who invented the computer?”<br>• Bits and Bytes<br>  ○ Read through this article and watch the video to learn about bits and bytes. In the next activity you will use your knowledge of bits to encode a message!<br>• Lab: Configuring a Computer<br>  ○ This lab teaches you how to personalize your computer settings. There are help sites for Windows, Mac, and Chromebooks if you get stuck. |

## Module 5: Intro to Web Design (2 weeks/10 hours)

Students explore HTML and CSS styling as they work to create their homepage.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40192

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| Objectives / Topics Covered | • Introduction to HTML<br>• Formatting Text<br>• Creating Links<br>• Incorporating Images<br>• Using Lists<br>• Applying Styling<br>• Complete your Homepage |
| Example Assignments / Labs | • Structure of an HTML Page<br>  ○ Using the HTML structure you learned earlier, create a page to introduce yourself to others.<br>• Styling a List<br>  ○ For this exercise, you are given a starter code that has some CSS styling. Your task is to add the styling for the unordered list.<br>• Complete Your Homepage<br>  ○ In this project, you'll complete your own homepage. Make sure your homepage has the following: a profile image, your name, a short bio about yourself, at least two links to some of your favorite websites, and anything else you want to add! |

## Module 6: Art with Code (2 weeks/10 hours)

Students explore the intersection of art and technology by creating art programs using p5.js.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40193

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| Objectives / Topics Covered | • p5.js<br>• Variables<br>• Loops<br>• Color Transitions<br>• Shape Transformations<br>• Direction<br>• Keyboard Data |
| Example Assignments / Labs | • Creative Coding<br>  ○ Learn what creative coding is and how you can use it to create cool art!<br>• MouseX and MouseY<br>  ○ Let's practice using the mouseX and mouseY together by recreating the following sketch.<br>• Grayscale to Color<br>  ○ Let's recreate an animation where the color of the shapes transitions from grayscale to color. |

## Module 7: The Design Process (1 week/5 hours)

Students are introduced to the Design Process as they apply the concepts they have learned so far by completing a fun, interactive coding project.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40213

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| Topics Covered | • The Design Process<br>• Feedback and collaboration<br>• p5.js |
| Example Assignments | • Who Uses the Design Process?<br>  ○ Click on each industry to find out how they use the design process!<br>• Code your Emoji!<br>  ○ Apply the Design Process as you create your emoji using p5.js |

## Module 8: Data and Spreadsheets (2 weeks/10 hours)

Students learn about data, spreadsheets, then complete a project.

Browse the full content of this unit at https://codehs.com/course/27992/explore/module/40194

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| Topics Covered | • Intro to Data<br>• Using Spreadsheets<br>• Creating charts and graphs<br>• Sort and Filter<br>• Statistical Measures<br>• Models<br>• Visualizing Data |
| Example Assignments | • Women in STEM<br>  ○ In this activity, you'll explore the stories of incredible women who made amazing discoveries, solved big problems, and even traveled to space! These women have shaped the world through Science, Technology, Engineering, and Math (STEM). Get ready to filter and sort data to uncover cool facts and connections!<br>• Olympic Athlete Statistics<br>  ○ In this exercise, you'll be exploring data collected on Olympic athletes who competed in the 2024 Paris Summer Games.<br>• Project: Create a Screentime Dashboard<br>  ○ In this project, you'll explore screen time data and create a screen time usage dashboard. A data dashboard is a tool that presents important information and data visualizations in one place, so you can better understand what's happening at a glance. |