Colorado Kindergarten Computer Science Course Syllabus

One Year for Elementary School, 36 Hours

Course Overview and Goals

The **Colorado Kindergarten Computer Science Course** introduces students to foundational programming concepts through a block-based programming language. Students explore digital literacy and computer science skills while engaging in lessons that integrate coding into math, science, English language arts (ELA), and social studies. This course emphasizes creativity, collaboration, and real-world connections, providing students with a strong foundation in both academic content, digital literacy, and computer science.

Learning Environment: This course is designed to be teacher-led, with ready-to-use lesson plans. Each programming lesson follows a structured format: **Introduction, Guided Practice, Independent Practice, Extension, and Reflection.** Many digital literacy lessons contain unplugged activities, requiring printed handouts and class activities to support hands-on learning.

The lessons are delivered in an **"I do, we do, you do"** format, ensuring a gradual release of responsibility and fostering confidence in students as they learn. Teachers can adapt the content to fit their schedule and instructional needs. The concepts taught in this course spiral across grade levels, ensuring that students can revisit and build upon their understanding year after year, even if all lessons are not completed within a single year. The course includes a total of **36 lessons,** each approximately 30-45 minutes long. This provides a full school year of material if teaching one lesson per week.

Programming Environment: Students will write and run programs that are saved in students' accounts. The environment supports interactive, hands-on programming, enabling students to create and debug projects in a user-friendly interface.

Prerequisites: There are no prerequisites for this course. It is designed to support all learners, regardless of prior computer science experience.

More Information: Browse the content of this course at https://codehs.com/course/CO_K/overview

A clickable PDF can be found at https://codehs.com/CO-K-5Roadmaps

Course Breakdown

Unit 1: Getting Started (5 lessons)

This module introduces students to basic computer usage skills—including logging in, mouse and keyboard operations, computational thinking, and computer components—to build confidence using technology independently.

Objectives / Topics Covered	- Learn how to log in and navigate the Playground. - Understand what a computer is and how its parts work together. - Practice using a mouse and keyboard. - Apply computational thinking to everyday routines.
Lessons	**Welcome to CodeHop!** ● Log in and navigate the CodeHop Playground. **Mouse Practice** ● Practice clicking, dragging, and basic mouse control through interactive games. **Keyboard Introduction** ● Learn the letters, numbers, and basic functions of the keyboard. **Computational Thinking: Morning Routines** ● Use patterns, sequencing, and decomposition to model a morning routine. ● *Standard Met: CS.K.1.1a* **Computer Basics: Introduction** ● Explore what a computer is, its parts (hardware/software, input/output), and simple troubleshooting steps.

Unit 2: Getting Started: Programming (7 lessons)

In this story-based unit, students will explore the basics of block-based programming, learning how to animate characters, build simple stories, and begin thinking like programmers through experimentation and play.

Objectives / Topics Covered	- Learn to navigate the CodeHop interface. - Add, delete, and modify characters and backgrounds. - Create sequences. - Introduce event blocks to trigger movement and interactions.
Lessons	**Drawing Tools: Fairy Tale Painting** ● Use drawing tools to create a custom fairy-tale scene. **Scout Adventures 1: Introducing Scout** ● Explore the CodeHop interface and add characters. **Scout Adventures 2: Scout Starts Exploring** ● Add backgrounds and an additional page to expand the scene. **Scout Adventures 3: Scout Meets a Friend** ● Modify and delete characters to adjust the story. **Scout Adventures 4: Scout Explores the Forest** ● Use motion blocks to move characters around the stage. **Scout Adventures 5: Scout and Bluebird Help** ● Build sequences of motion blocks to navigate and collect objects. **Scout Adventures 6: Scout Celebrates with Friends** ● Create a celebration scene using characters, pages, backgrounds, and motion sequences with events.

Unit 3: Digital Literacy (7 lessons)

In this unit, students will learn the basics of digital citizenship, including how to navigate technology safely, make responsible choices online, and understand the roles computers play in their lives and communities.

Objectives / Topics Covered	- Identify ways to use technology safely and responsibly. - Identify private and personal information. - Collect, organize, and analyze data. - Understand how networks allow people to connect and share information.

Lessons	**Being Kind Online**
	    ● Identify cyberbullying and understand how to treat others online.
	    ● *Standards Met: CS.K.6.1a, CS.K.6.1b*
	Introduction to Responsible Technology Use
	    ● Learn safe, respectful technology use and understand Acceptable Use Policies.
	    ● *Standards Met: CS.K.6.1a, CS.K.6.1b*
	Keeping Information Safe
	    ● Identify private and personal information and how to protect it.
	    ● *Standards Met: CS.K.2.1a, CS.K.4.1a, CS.K.4.1b*
	What Can Data Tell Us?
	    ● Collect and interpret data related to school transportation.
	    ● *Standard Met: CS.K.1.2b*
	Sorting with Decision Trees
	    ● Create a simple decision tree to sort items based on rules.
	    ● *Standard Met: CS.K.1.2b*
	Introduction to Data Storage and Files
	    ● Recognize that computers store data in files and model simple data collection and storage.
	    ● *Standard Met: CS.K.1.2a*
	Using Networks to Connect
	    ● Explain how people and devices share information over wired and wireless networks.

Unit 4: Programming Exploration (11 lessons)

In this unit, students will gain basic programming skills using a block-based programming language. Students will practice with events, sequences, loops, and computational thinking methods.

Objectives / Topics Covered	- Use events to trigger action in a program. - Build sequences of step-by-step instructions to program a character. - Use loops to cause repetition in a program. - Search for information online and communicate findings. - Participate in the steps of the design process.

Lessons	**Coding Card Game: Sequences**
	    ● Create sequences of instructions to guide Scout through a maze.
	Acting with Events
	    ● Act out how events trigger actions in programs.
	Introduction to Events
	    ● Use different types of events to start actions in programs.
	Sequences: Snowball Fight
	    ● Create a program using multiple sequences.
	Introduction to Grow and Shrink Blocks
	    ● Use size-change blocks to grow and shrink characters.
	Introduction to Pages
	    ● Create programs using multiple pages.
	Introduction to Speed Blocks
	    ● Use different speed blocks to animate characters.
	Loops
	    ● Use loops in a program to repeat code.
	Introduction to Research (2 part lesson)
	    ● Create a program to communicate research visually.
	Introduction to the Design Process
	    ● Use the design process to solve a simple problem through an animation.

Unit 5: Interdisciplinary Exploration (7 lessons)

This unit integrates programming with subjects like social studies, math, science, and ELA, enabling students to model real-world concepts using events, messages, and interactive programs.

Objectives / Topics Covered	● Using events to model concepts. ● Use programs to model processes.

Lessons	**Our Responsibilities**
	  ● Program characters to explain responsibility at home and school.
	Phonics: Letter Sounds
	  ● Create a phonics game using tap events and recorded audio.
	Draw and Tell
	  ● Create a scene and write or narrate a sentence about it.
	How Living Things Survive
	  ● Illustrate and explain survival strategies of living things.
	Story Problems: Add and Subtract within 10
	  ● Represent addition or subtraction story problems through animated scenes.
	Decompose Numbers Up to 10
	  ● Build an interactive program visualizing number decomposition.
	Creating Shapes
	  ● Use events to animate shapes and combine them into a more complex design.

Kindergarten Course Supplemental Materials

Resources	Description
Parent Welcome Letter (Spanish)	Send this letter home to introduce families to their new computer science curriculum.
Warm-Up Activities	This warm-up activity slide deck provides 5-10 minute problems aligned with computer science skills to engage students at the start of class, allowing teachers to preview or review concepts with answer keys and discussion tips included in the Speaker Notes.
Program Self-Assessment (Spanish)	This is a student self-assessment tool designed to help K-6 learners reflect on their programming projects, evaluate their skills in algorithms, debugging, collaboration, and reflection, and set goals for improvement.
Peer Review Resources (Spanish)	This provides structured worksheets to facilitate student feedback during collaborative coding projects. It encourages reflection by guiding students to highlight successes, ask questions, and offer constructive feedback on their partner's work.
Lesson Reflection & Computational Thinking (Spanish)	This guides students in engaging with computational thinking concepts, preparing for discussions, reflecting on lessons, and applying their learning to real-world problem-solving.
These resources and more are found on the **CodeHop Resources Page**.	