Virginia Computer Science
3rd Grade Course Syllabus
One Year for Elementary School, 36 Hours

Course Overview and Goals

The Virginia Computer Science 3rd Grade Course introduces students to foundational programming concepts through a block-based programming language. Students will develop computational thinking and problem-solving skills while learning to create interactive projects, animations, and games. This course emphasizes creativity and collaboration, providing students with a solid base in computer science concepts and digital literacy.

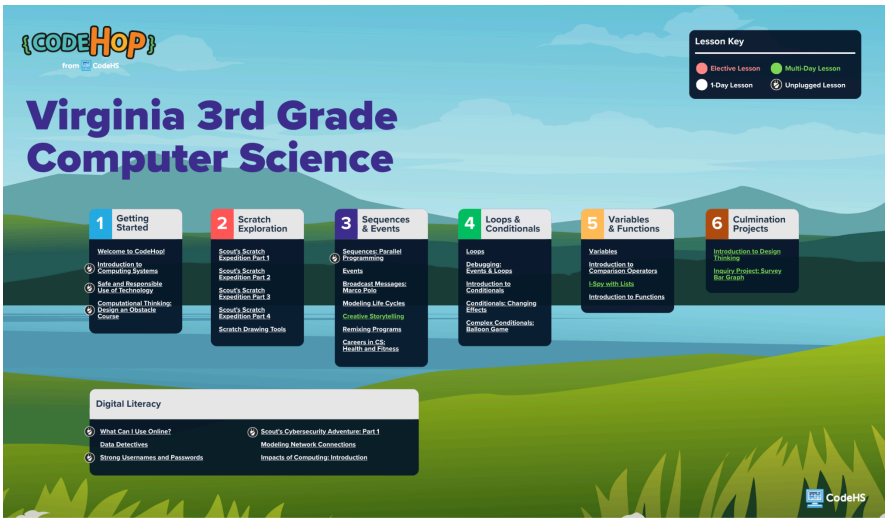
Learning Environment: This course is teacher-led and includes ready-to-use lessons following a consistent structure: Introduction, Guided Practice, Independent Practice, Extension, and Reflection. Instruction follows an "I do, we do, you do" model and incorporates spiral review to reinforce concepts and build confidence over time.

The course includes 36 lessons, each approximately 45 minutes long, providing a full year of instruction when taught once per week. While the course allows for instructional flexibility, some lessons are required to fully meet state computer science standards and are clearly identified within the syllabus. All Digital Literacy lessons are required to ensure full standards alignment, as they address essential non-programming computer science concepts. Required lessons are labeled with the specific standards they address to support planning and compliance.

Programming Environment: Students will write and run programs that are saved in the CodeHop platform. 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/27182/overview



A clickable PDF can be found at https://codehs.com/VA-CSRoadmaps

Course Breakdown

Unit 1: Getting Started (3 lessons)

Students build foundational computer science and technology skills by learning about computing systems, responsible technology use, and computational thinking. These lessons prepare students to log in, navigate, and approach problem-solving with structured processes.

Objectives / Topics Covered	● Identify components of a computing system and basic troubleshooting. ● Demonstrate safe and responsible technology use. ● Apply computational thinking to break down and sequence real-world routines.
Lessons	**Welcome to CodeHop! (15 minute lesson)** ● Practice logging in and exploring the Playground before starting a full lesson. **Introduction to Computing Systems** ● Identify parts of the computing system and solve basic hardware/software problems. **Safe and Responsible Use of Technology** ● Create a personal plan for balanced and safe technology use. **Computational Thinking: Design an Obstacle Course** ● Create a program where multiple sequences run at the same time.

Unit 2: Programming Exploration (5 lessons)

In this story-driven unit, students follow Scout the Squirrel on an adventure through programming while learning to animate characters, create stories, and use basic coding concepts.

Objectives / Topics Covered	● Explore the programming interface and basic block types. ● Animate characters with motion, looks, and speech. ● Use sequences, events, and loops to build short stories. ● Customize characters and scenes with drawing tools.
Lessons	**Scout's Programming Expedition Part 1** ● Program a sprite to move and talk using basic commands. **Scout's Programming Expedition Part 2** ● Add sprites and create a sequence to animate part of the story. **Scout's Programming Expedition Part 3** ● Animate a Scout story using loops, events, and motion blocks. **Scout's Programming Expedition Part 4** ● Continue the animated story using events, looks, and motion for more interaction. **Drawing Tools** ● Customize sprites and backdrops using drawing tools.

Unit 3: Sequences & Events (8 lessons)

Students expand their programming skills by combining sequences, events, and broadcast messages to create interactive stories, models, and animations. They will also practice remixing existing projects and connect coding to real-world applications.

Objectives / Topics Covered	● Build and run parallel sequences. ● Use events and broadcast messages to control sprite actions. ● Create models of real-world processes with coding. ● Plan, animate, and remix interactive stories. ● Connect coding skills to real-world applications and careers.

Lessons	**Sequences: Parallel Programming** ● Create a program where multiple sequences run at the same time. **Events** ● Use event blocks to start actions when keys are pressed or sprites are clicked. **Broadcast Messages: Marco Polo** ● Send and receive messages between sprites to coordinate actions. **Modeling Life Cycles** ● Animate a frog's life cycle to model real-world processes. **Creative Storytelling (2 day lesson)** ● Plan and animate a story using sequences and event-based interactions. **Remixing Programs** ● Remix digital programs and give appropriate credit to original creators. **Careers in CS: Health and Fitness** ● Explore how coding supports fitness and create an animation showing technology in action.

Unit 4: Loops & Conditionals (5 lessons)

Students build on their foundational coding skills by learning how to use loops to repeat instructions and conditionals to make decisions in programs. They practice debugging, explore increasingly complex conditional logic, and create interactive projects that respond to different inputs.

Objectives / Topics Covered	● Explain and apply loops to repeat instructions. ● Debug programs with loops and events. ● Use simple if/then conditionals. ● Create programs that apply conditional logic for decision-making. ● Explore if/then/else conditionals to build complex outcomes.
Lessons	**Loops** ● Learn how loops repeat instructions and use them in a project. **Debugging: Events and Loops** ● Decompose a program to debug and make the program run as intended. **Introduction to Conditionals** ● Learn what conditionals are and use if/then blocks in a program. **Conditionals: Changing Effects** ● Create a program using conditionals to trigger different visual responses. **Complex Conditionals: Balloon Game** ● Create a game using if/then/else blocks to respond to different outcomes.

Unit 5: Variables & Functions (5 lessons)

In this unit, students use variables, lists, comparison operators, and custom functions to manage and organize data in more complex programs.

Objectives / Topics Covered	● Create and update variables. ● Use comparison operators in decision-making. ● Build lists to organize data for games and activities. ● Define and reuse functions to simplify large programs.
Lessons	**Variables** ● Learn what a variable is and how to create and change its value. **Introduction to Comparison Operators** ● Use comparison operators with numbers and variables in if/else logic. **I-Spy with Lists (2 day lesson)** ● Build an interactive I-Spy game using lists and variables to track items and responses. **Introduction to Functions**

	● Learn how to define and use functions to simplify and organize code.

Unit 6: Culmination Project (4 lessons)

Students apply their programming knowledge and creativity to larger projects that integrate design thinking, data, and storytelling. These culminating lessons encourage students to combine skills from across the course to demonstrate mastery and problem-solving.

Objectives / Topics Covered	● Apply the design thinking process to improve accessibility. ● Use the inquiry process to collect, analyze, and present data. ● Combine multiple coding skills into capstone-style projects.
Lessons	**Introduction to Design Thinking (2 day lesson)** ● Use the design thinking process to brainstorm, build, and improve a program. **Inquiry Project: Survey Bar Graph (2 day lesson)** ● Follow the inquiry process to investigate a topic and modify a program to display survey results using a bar graph.

Unit 7: Digital Literacy (6 lessons)

Students build foundational digital literacy skills by exploring safe and responsible technology use, data evaluation, cybersecurity, and networks. They also consider how technology impacts culture and practice attribution when using online information.

Objectives / Topics Covered	● Search for information online and give proper credit. ● Evaluate data for reliability, analyze results, and make predictions. ● Create and protect strong usernames and passwords. ● Identify basic cybersecurity threats and safety practices. ● Model how data travels across networks. ● Reflect on the cultural impacts of technology over time.
Lessons	**What Can I Use Online?** ● Practice safe online research, use keywords effectively, and cite sources properly. **Data Detectives** ● Evaluate and analyze data for reliability to draw conclusions and make predictions. **Strong Usernames and Passwords** ● Create strong credentials and explain how they keep information safe. **Scout's Cybersecurity Adventure: Part 1** ● Identify common cyber threats and strategies for staying safe online. **Modeling Network Connections** ● Show how data travels between devices using a network. **Impacts of Computing: Introduction** ● Explore how computing has changed communities and evolved over time.

Virginia Computer Science 3rd Grade Course Supplemental Materials

Resources	Description
Parent Welcome Letter (Spanish)	Send this letter home to introduce families to computer science.
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.
Design-Your-Own-Lesson Templates	Empower your students to explore and express their knowledge creatively with our versatile graphic organizer templates. Designed with adaptability and ease of use in mind, these interactive tools transform any subject into an engaging, hands-on learning experience.
All of these resources and more are found on the **CodeHop Resources Page**.	