



5th Grade Massachusetts Digital Literacy and Computer Science Course Syllabus

One Year for Elementary School, 36 Hours

Course Overview and Goals

The 5th Grade Massachusetts Digital Literacy and Computer Science 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.

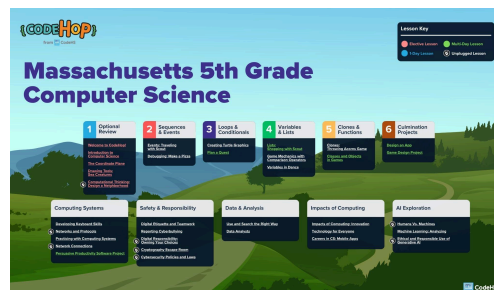
Standards Alignment Note: Lessons that list “*Standards Met*” (below) are required to fully meet state computer science standards. Lessons without a standards tag support spiral review, practice, or enrichment.

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.

Assessments: Some units conclude with a brief 5-question quiz designed to assess student understanding of the concepts and skills introduced in the unit. Quizzes can be assigned digitally, completed as a QuizBuzz activity, or printed for paper-based completion.

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/28650/overview>



A clickable PDF can be found at https://codehs.com/MA_Roadmaps

Course Breakdown

Optional Review

Reviews CodeHop basics, the coordinate plane, drawing tools, and computational thinking for students who need extra practice before starting 5th grade content.

Objectives / Topics Covered	• Review CodeHop basics and the coordinate plane • Review computational thinking concepts
Lessons	Welcome to CodeHop! • Log in and use the CodeHop Playground. Introduction to Computer Science • Define important computer science vocabulary and create a simple program. The Coordinate Plane • Create an open-ended animation using the coordinate plane. Drawing Tools: Sea Creatures • Use CodeHop's image editing tools to create and program deep-sea creatures. Computational Thinking: Design a Neighborhood • Use computational thinking to design a neighborhood.

Unit 1: Sequences & Events (2 lessons)

Introduces events and continues building debugging skills through a pizza-making project.

Objectives / Topics Covered	• Use events in a program • Debug a program using decomposition
Lessons	Events: Traveling with Scout • Use events in a program. Debugging: Make a Pizza (3-5.CT.b.5, 3-5.CT.d.3) • Decompose a program to debug and make it run as intended.

Unit 2: Loops & Conditionals (3 lessons)

Introduces turtle graphics and planning skills as students design and decompose a quest program.

Objectives / Topics Covered	• Use loops to create turtle graphics • Plan and decompose the steps of a program
Lessons	Creating Turtle Graphics (3-5.CT.b.4) • Use the pen tool to create looping turtle graphics. Plan a Quest (2 classes 3-5.CT.a.3, 3-5.CT.b.2) • Plan and decompose the steps needed to create a quest program. 5th Grade Sequences, Events, Loops & Conditionals Quiz (5 questions)

Unit 3: Variables & Lists (4 lessons)

Introduces variables, lists, and comparison operators through a shopping simulator, a game, and a dance project.

Objectives / Topics Covered	• Create and use variables and lists • Use comparison operators to control a program
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Lessons	Lists: Shopping with Scout (2 classes 3-5.CT.d.4) - Create a shopping simulator using variables, lists, and operators. Game Mechanics with Comparison Operators (3-5.CT.d.2) - Use comparison operators and variables to create ending game mechanics. Variables in Dance (3-5.CT.d.4) - Use variables to control pitch and dance speeds in a program.
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Unit 4: Clones & Functions (3 lessons)

Introduces clones, classes, and objects through interactive game projects.

Objectives / Topics Covered	- Use clones to create a game - Use classes, objects, and randomizers in a program
Lessons	Clones: Throwing Acorns Game - Create a throwing-acorns game using clones. Classes and Objects in Games (2 classes) - Learn about classes and objects while creating an interactive game and using randomizers to change the characteristics of objects. 5th Grade Variables, Lists, Clones & Functions Quiz (5 questions)

Unit 5: Culmination Projects (6 lessons)

Students apply the year's programming skills in two culminating projects: designing an app and collaborating on a game.

Objectives / Topics Covered	- Use design thinking to build an app that solves a user's need - Collaborate to build a game using loops, conditionals, and variables
Lessons	Design an App (3 classes 3-5.CT.d.1) - Use the design thinking process to design an app that helps solve a user's need. Game Design Project (3 classes 3-5.CT.d.1) - Collaborate to design and create a game using multiple programming skills such as loops, conditionals, and variables.

Unit 6: Computing Systems (5 lessons)

Explores networks, protocols, computing systems, and productivity software used to persuade an audience.

Objectives / Topics Covered	- Explain how network protocols enable data transfer - Identify parts of a computing system - Use productivity software to persuade an audience
Lessons	Developing Keyboard Skills - Use proper finger placement to practice typing paragraphs. Networks and Protocols (3-5.CS.c.4) - Explain how network protocols enable data transfer and compare WiFi, wired, and cellular networks. Practicing with Computing Systems (3-5.CS.a.1, 3-5.CS.a.2, 3-5.CS.a.4, 3-5.CS.a.5) - Identify parts of the computing system and identify simple hardware and software problems. Network Connections (3-5.CS.c.1, 3-5.CS.c.4) - Identify and compare wired and wireless networks and model how devices communicate using packets. Persuasive Productivity Software Project (2 classes 3-5.DTC.a.2, 3-5.DTC.a.3) - Use word processing, spreadsheet, and presentation software to organize and present

	information to persuade an audience. 5th Grade Computing Systems Quiz (5 questions)
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Unit 7: Safety & Responsibility (5 lessons)

Introduces digital etiquette, reporting cyberbullying, responsible choices online, cryptography, and cybersecurity policy.

Objectives / Topics Covered	• Demonstrate digital etiquette and teamwork • Recognize and report cyberbullying • Make responsible choices to stay safe online • Explain cybersecurity policies and laws
Lessons	Digital Etiquette and Teamwork (3-5.CAS.a.3) • Demonstrate proper digital etiquette when communicating in an online community. Reporting Cyberbullying (3-5.CAS.a.6, 3-5.CAS.a.7, 3-5.CAS.c.7) • Recognize and compare types of cyberbullying, identify its impacts, and demonstrate how to report it and act as an upstander. Digital Responsibility: Owning Your Choices (3-5.CAS.b.1) • Identify online dangers and demonstrate how to make responsible choices to stay safe. Cryptography Escape Room (3-5.CT.a.1) • Learn basic cryptography and demonstrate how to create and solve multiple ciphers. Cybersecurity Policies and Laws (3-5.CS.a.6, 3-5.CS.c.2) • Explain policies related to the classroom or school, and research a cybersecurity law specific to their state. 5th Grade Safety & Responsibility Quiz (5 questions)

Unit 8: Data & Analysis (2 lessons)

Introduces searching for and attributing information online, and analyzing data to draw conclusions.

Objectives / Topics Covered	• Search for and attribute information online • Analyze data to draw conclusions and make predictions
Lessons	Use and Search the Right Way (3-5.DTC.c.1, 3-5.DTC.c.2, 3-5.DTC.c.4, 3-5.DTC.c.6) • Search for information to answer questions online and provide proper attribution to sources. Data Analysts (3-5.DTC.c.3) • Analyze data to draw conclusions and make predictions. 5th Grade Data & Analysis Quiz (5 questions)

Unit 9: Impacts of Computing (3 lessons)

Explores how technology and culture influence each other, how inclusion has shaped computing, and careers building mobile apps.

Objectives / Topics Covered	• Explain how technology and culture influence each other • Analyze how inclusion has changed computing technologies • Improve a game by modifying code
Lessons	Impacts of Computing: Innovation (3-5.CAS.c.4) • Explain how technology and culture influence each other and create a project comparing past and present versions of a technology and predicting future impacts. Technology for Everyone (3-5.CAS.c.4) • Analyze how including more people has changed computing technologies.

	Careers in CS: Mobile Apps Analyze and improve a game by modifying code and adding new functionality. 5th Grade Impacts of Computing Quiz (5 questions)
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Unit 10: AI Exploration (3 lessons)

Introduces comparisons between humans and machines, training models, and the ethical use of generative AI.

Objectives / Topics Covered	- Compare human and computer performance on tasks - Train and analyze an AI model - Describe ethical considerations for using generative AI
Lessons	Humans Vs. Machines (3-5.CS.b.1, 3-5.CS.b.3) - Compare and contrast human and computer performance on similar tasks, explain advantages and limitations of technology, and describe computer perception. Machine Learning: Analyzing (3-5.CT.e.1, 3-5.CT.e.2, 3-5.CT.e.3) - Train and interact with an AI model using Teachable Machine and analyze the relationship between training data and the model's output. Ethical and Responsible Use of Generative AI - Describe the pros and cons of generative AI and complete a class Code of Conduct to follow when using AI. 5th Grade AI Exploration Quiz (5 questions)

5th Grade Massachusetts Digital Literacy and Computer Science 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.
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.

These resources and more are found on the [CodeHop Resources Page](#).