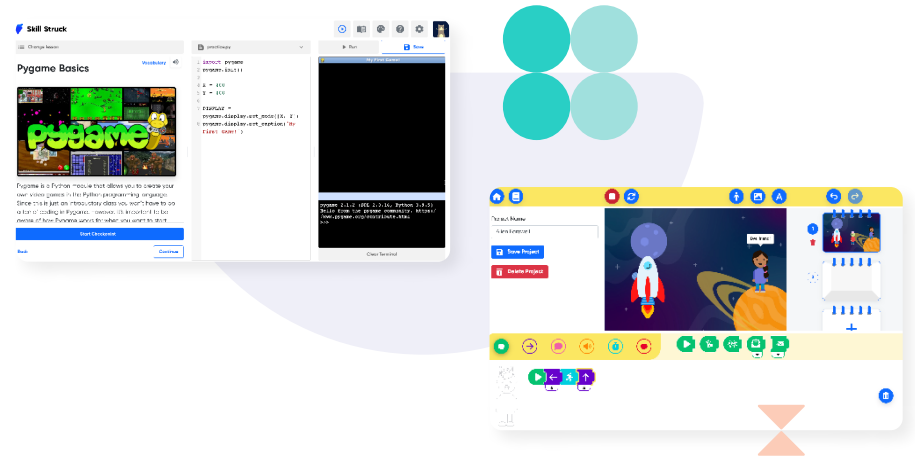




Example of K-12 Scope and Sequence with Skill Struck



Grade	Course	Frequency	Proposed Curriculum
K	Kindergarten Computer Science Basics + Block Coding	Full Year 1-4x/month @ 25-40 min per lesson	<p>CS Concepts: Computer Devices, Navigation, Identifying Problems, Digital Citizenship, Algorithms, Data, Flight Training Block Coding.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Identify computer hardware, software, and common computer problems 2. Explain what an algorithm is and create algorithms through unplugged activities 3. Identify patterns in data charts to make predictions and 4. Program algorithms using block coding techniques.
1	1st Grade Computer Science Basics + Block Coding	Full Year 1-4x/month @ 30-40 min per lesson	<p>CS Concepts: Computer Parts, Computer Organization, Digital Citizenship, Algorithms, Programming, Data, Flight Training Block Coding.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Identify computer hardware, software, and common computer problems 2. Identify what makes a good digital citizen 3. Create algorithms through unplugged activities 4. Represent data and draw conclusions in multiple visual models and 5. Program algorithms using block coding techniques.



Grade	Course	Frequency	Proposed Curriculum
2	2nd Grade Computer Science Basics + Block Coding	Full Year 1-4x/month @ 30-40 min per lesson	<p>CS Concepts: Internet Safety Basics, File Organization, Troubleshooting, Digital Citizenship, Algorithms, Programming, Data, Flight Training Block Coding.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Identify how the internet transfers information 2. Create and identify strong passwords 3. Identify what makes a good digital citizen 4. Collect data and draw conclusions 5. Program algorithms using block coding techniques.
3	3rd Grade Computer Science Foundations + Block Coding for Web Development + These platform lessons are taught in alignment with the provided grade-level lesson plans.	Full Year 1-4x/month @ 30-40 min per lesson	<p>Coding Concepts: Computer Systems, Cybersecurity, Digital Citizenship, Programming Basics (i.e. Sequencing, Algorithms, Events, Variables Conditionals, Loops), Data, HTML Block Coding.</p> <p>CS Integration in Core Subjects: Including math, science, and ELA exercises that align with the CCSS K-12 and NGSS Frameworks.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Write programs that direct computers to follow instructions 2. Precisely time and control character movement and animation 3. Describe how internal and external computer parts work together to form a system 4. Determine solutions to computer issues using troubleshooting strategies 5. Practice good digital citizenship through acting responsibly and giving attribution to others for their work and 6. Create websites using HTML block coding techniques.

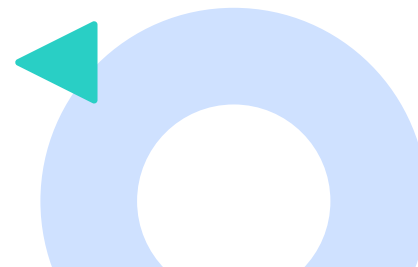
Grade	Course	Frequency	Proposed Curriculum
5	5th Grade Computer Science Foundations + Web Development + These platform lessons are taught in alignment with the provided grade-level lesson plans	Full Year 1-4x/month @ 30-40 min per lesson	<p>Coding Concepts: Troubleshooting, Internet Networks, Improving Computational Artifacts, Cybersecurity, Digital Citizenship, Programming Basics (i.e. Sequencing, Algorithms, Events, Variables Conditionals, Loops), Data, HTML Syntax Coding.</p> <p>CS Integration in Core Subjects: Including math, science, and ELA exercises that align with the CCSS K-12 and NGSS Frameworks.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Create programs that include sequences, events, variables, loops, and conditionals 2. Improve computational artifacts based on peer feedback and accessibility considerations 3. Express technology's influence on the world 4. Identify binary code and create bitmaps and 5. Create a website using advanced HTML syntax coding techniques.



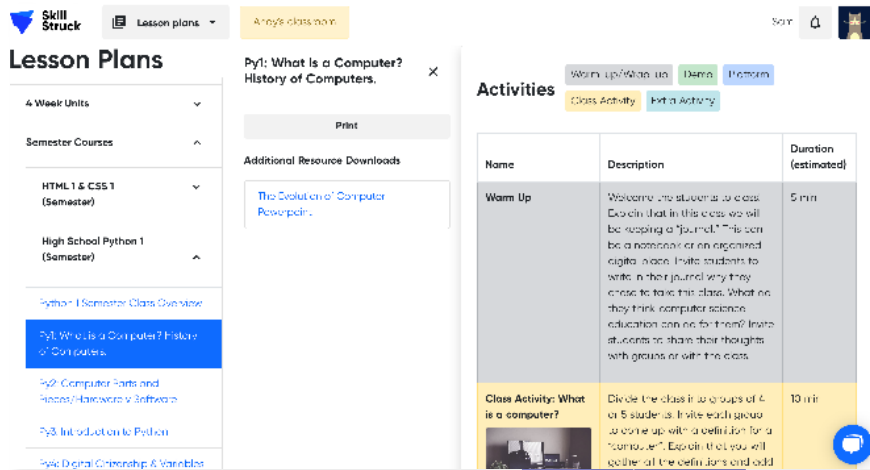
Grade	Course	Frequency	Proposed Curriculum
Any Grade	Type Station Keyboarding	8-12 weeks @ 30 min/day	<p>Keyboarding Concepts: Posture and Hand Position, Home Row typing, Cybersecurity, Keyboarding Advantages and Disadvantages, Keyboarding Shortcuts.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Properly type using correct posture and hand position 2. Type using Home Row keyboarding techniques and 3. Demonstrate correct keyboarding speed and accuracy through a variety of timed typing activities.
6th, 7th, and 8th Grade	HTML/ CSS 1	Semester 3x/week @ 50min each	<p>Coding Concepts: Headers, Text Colors, Fonts, HTML Structure, Background Color, HTML Title, Paragraphs, Breaks & Dividers, Ordered Lists, Unordered Lists, Text Align, Links, Buttons & Event Listeners, Images, Background Images, Videos, Image Links, Marquees, The Style Tag, Background Image Style, Commenting, Classes, Div Tags, Margins and Padding, Color Picker, Color Gradient, Text Shadow, CSS Icons, List Styles, Rounded Corners, Borders, Box Shadow, Button Design, Pseudo Selectors, Opacity, Positioning, Media Queries, Debugging.</p> <p>Computer Science Concepts: What is Computer Programming?, Digital Citizenship, The Internet, Computers and Your World, Problem Solving, Data Representation, Careers in Web Development, Break Down Code, Accessibility, Troubleshooting, Flow Charts, Algorithms, Encryption, Data & Society, Team Programming, Debugging, The Design Process, Market Research.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Build web pages using best practices 2. Choose between different approaches for the most efficient code and 3. Build web pages that are intuitive to use and utilize effective design strategies.



Grade	Course	Frequency	Proposed Curriculum
7th and 8th Grade	JavaScript 1	Semester 3x/week @ 50min each	<p>Coding Concepts: Console Logs, Alerts, Prompts, Concatenation, Arithmetic, Functions, Parameters, Return Statement, Commenting, If Statements, Conditionals, Arrays, For Loops, Nested Loops, While Loops.</p> <p>Computer Science Concepts: What is Computer Programming?, Digital Citizenship, The Internet, Computers and Your World, Problem Solving, Data Representation, Careers in Web Development, Break Down Code, Accessibility, Troubleshooting, Flow Charts, Algorithms, Encryption, Data + Society, Team Programming, Debugging.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none">1. Write programs that make computers follow instructions2. Write code that makes decisions, choosing between multiple options3. Write code that loops, repeating instructions until certain outcomes are reached4. Organize their code to be more efficient and useful and5. Use functions to write multiple sections of code that communicate with each other.



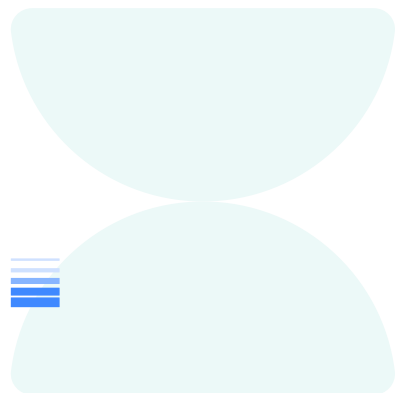
Grade	Course	Frequency	Proposed Curriculum
7th and 8th Grade	Python 1	Semester 3x/week @ 50min each	<p>Coding Concepts: Variables, Inputs/Outputs, Syntax + Comments, Variable Types, Numbers, Converting, Modulus, Strings, Concatenation, String Methods, Lists, If/Else Statements, For Loops, Debugging.</p> <p>Computer Science Concepts: What is a Computer, Digital Citizenship, The Internet, Problem Solving, Breaking down Big Projects, Careers in Software Development, Digital Communication, Accessibility, Troubleshooting, Data & Storage, Encryption, Flowcharts, Documenting Code, Team Coding.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Write programs that make computers follow instructions 2. Write code that makes decisions, choosing between multiple options 3. Write code that loops, repeating instructions until certain outcomes are reached 4. Organize their code to be more efficient and useful and 5. Use functions to write multiple sections of code that communicate with each other.



The screenshot shows the Skill Struck Lesson Plans interface. On the left, there is a sidebar with 'Lesson Plans' and a list of courses including 'High School Python 1 (Semester)'. The main content area displays a lesson plan for 'Py1: What is a Computer? History of Computers'. It includes a 'Print' button and a section for 'Additional Resource Downloads' with a link to 'The Evolution of Computer Powerpoint'. Below this is an 'Activities' table with three rows: 'Warm Up', 'Class Activity', and 'Extra Activity'. The 'Class Activity' row is highlighted in yellow.

Name	Description	Duration (estimated)
Warm Up	Welcome one student to class. Explain that in this class we will be keeping a "journal." This can be a notebook or an organized digital space. Invite students to write in their journal why they chose to take this class. What do they think computer science education can do for them? Invite students to share their thoughts with groups or with the class.	5 min
Class Activity: What is a computer?	Divide the class into groups of 4 or 5 students. Invite each group to come up with a definition for a "computer". Explain that you will gather all the definitions and add	10 min
Extra Activity		

Grade	Course	Frequency	Proposed Curriculum
8th, 9th, and 10th Grade	Game Design	3x/week @ 50min each	<p>Coding Concepts: Variables, Inputs/Outputs, Syntax + Comments, Variable Types, Numbers, If/Else Statements, For Loops, Debugging.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Write programs that make computers follow instructions 2. Write code that makes decisions, choosing between multiple options 3. Write code that loops, repeating instructions until certain outcomes are reached 4. Effectively draw shapes and position sprites on a grid and 5. Animate the sprites
9th and 10th Grade	HTML/ CSS 2	Unit	<p>Coding Concepts: Text Input and Output, Statements, Expressions, Variables, Mathematical Operators, Conditionals, Booleans, Logical Operators, While Loops, Libraries, Randomness, Debugging, Coordinates, Windows, Drawing Lines and Shapes, RGB Colors, Tuples, Procedural Animation, Event Loops, Mouse and Keyboard Input, Timing and Framerate.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Build web pages using best practices 2. Choose between different approaches for the most efficient code and 3. Build web pages that are intuitive to use and utilize effective design strategies.

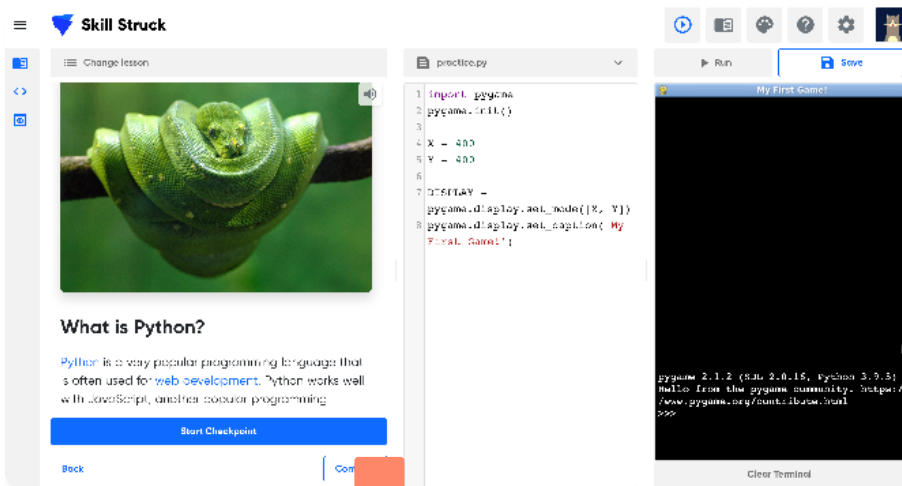


Grade	Course	Frequency	Proposed Curriculum
9th and 10th Grade	Python 2	Unit	<p>Coding Concepts: If Statement in a For Loop, Accessing Items in a List, Using Integers in a List, Adding to and Removing from Lists, While Loops, Functions, Parameters, Dictionaries, Adding to and Removing from Dictionaries, Looping Through a Dictionary, Tuples.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none">1. Write programs that make computers follow instructions2. Write code that makes decisions, choosing between multiple options3. Write code that loops, repeating instructions until certain outcomes are reached4. Organize their code to be more efficient and useful and5. Use functions to write multiple sections of code that communicate with each other.
10th, 11th, and 12th Grade	JavaScript 2	Unit	<p>Coding Concepts: Objects, Accessing Object Attributes/Properties, Methods, Constructors, jQuery, Tag Naming, getElementByld, Inner HTML.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none">1. Write programs that make computers follow instructions2. Write code that makes decisions, choosing between multiple options3. Write code that loops, repeating instructions until certain outcomes are reached4. Write effective object-oriented programs and5. Access different elements of code using jQuery.

Grade	Course	Frequency	Proposed Curriculum
10th, 11th, and 12th Grade	AP CSP	1 year	<p>Coding Concepts: Variables, Inputs/Outputs, Syntax + Comments, Variable Types, Numbers, Converting, Modulus, Strings, Concatenation, String Methods, Lists, If/Else Statements, For Loops, Debugging, Adding/Removing from lists, Changing Lists, While Loops, Functions, Random.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none">1. Write programs that make computers follow instructions2. Write code that makes decisions, choosing between multiple options3. Write code that loops, repeating instructions until certain outcomes are reached4. Organize their code to be more efficient and useful and5. Use functions to write multiple sections of code that communicate with each other.
11th and 12th Grade	Python 3	Unit	<p>Coding Concepts: Read and Write to Files, Multi-dimensional lists, Nested For Loops, Object Oriented Programming, Stacks, Recursion, Bubble Sort, Selection Sort, Insertion Sort, Merge Sort.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none">1. Write programs that make computers follow instructions2. Write code that makes decisions, choosing between multiple options3. Write code that loops, repeating instructions until certain outcomes are reached4. Organize their code to be more efficient and useful and5. Use functions to write multiple sections of code that communicate with each other.



Grade	Course	Frequency	Proposed Curriculum
11th and 12th Grade	Python ITS Certification	3x/week @ 50min each	<p>Coding Concepts: Variables, Inputs/Outputs, Syntax + Comments, Variable Types, Numbers, Converting, Modulus, Strings, Concatenation, String Methods, Lists, If/Else Statements, For Loops, Debugging, If Statement in a For Loop, Accessing Items in a List, Using Integers in a List, Adding to and Removing from Lists, While Loops, Functions, Parameters, Random, Reading and Writing to Files.</p> <p>Course Outcomes: At the completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Write programs that make computers follow instructions 2. Write code that makes decisions, choosing between multiple options 3. Write code that loops, repeating instructions until certain outcomes are reached 4. Organize their code to be more efficient and useful and 5. Prepare for the IT Certification Testcode that communicate with each other.code using jQuery.



The screenshot displays the Skill Struck learning environment. On the left, a lesson card titled "What is Python?" features a green tree frog and a "Start Checkpoint" button. The main area is a code editor for a file named "practice.py" containing the following Python code:

```

1 import pygame
2 pygame.init()
3
4 X = 400
5 Y = 400
6
7 DISPLAY =
pygame.display.set_mode([X, Y])
8 pygame.display.set_caption('My
First Game!')

```

Below the code editor is a terminal window titled "My First Game!" showing the output of the code:

```

pygame 2.1.2 (SDL 2.0.15, Python 3.9.5)
Hello from the pygame community. https://
www.pygame.org/contributing.html
>>>

```

Buttons for "Run" and "Save" are visible above the terminal, and a "Clear Terminal" button is at the bottom.

Additional Course Options for a Customized Computer Science Pathway

K-2	3-5	6-8	9-12
<p><i>1-4x a month</i></p> <ul style="list-style-type: none"> + Unplugged Activities + Flight Training Block Coding 	<p><i>1-4x a month</i></p> <ul style="list-style-type: none"> + Unplugged Activities + Intro to HTML + Intro to JavaScript + Typing + Cross Curricular: Math, Science, ELA 	<p><i>Semester course options</i></p> <ul style="list-style-type: none"> + HTML 1/CSS 1 + Python 1 + JavaScript 1 + Web Development + CS Principles + Computer Programming 1 + Exploring CS + Creative Coding (Game Design) + Coding Fundamentals <p><i>9-Week course option</i></p> <ul style="list-style-type: none"> + CS Discoveries <p><i>Other unit options</i></p> <ul style="list-style-type: none"> + Exploring Match through Python Code + Exploring Conservation through Python Code + CS Basics 	<p><i>Semester course options</i></p> <ul style="list-style-type: none"> + Python 1 + JavaScript 1 + Web Development + CS Principles + Computer Programming 1 + Exploring CS + Creative Coding (Game Design) <p><i>Year course options</i></p> <ul style="list-style-type: none"> + AP CSP + Python ITS Cert + Fundamentals of CS <p><i>Other unit options</i></p> <ul style="list-style-type: none"> + HTML 2 / CSS 2 + Python 2 + JavaScript 2 + Python 3

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