

2019 EDITION

Pennsylvania Computer Science Education Guide



Prepared by CodeHS
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Why Computer Science?

In the 21st century, coding is a foundational skill, just like reading and writing. Everyone should get the chance to learn how to code—it's a skill that provides limitless creative opportunities to students and future generations.

With great curriculum, resources, and support, school districts across the country can implement high-quality computer science programs. At CodeHS, our goal is to make computer science education fun and accessible to all!

Pennsylvania CS Education Overview

In January 2018, Pennsylvania's State Board of Education adopted the Computer Science Teachers Association K-12 Computer Science Standards. Governor Wolf has also made it a point to emphasize the importance of computer science education in Pennsylvania in the last year by becoming a leading member of the Governors for Computer Science Initiative.

PASmart, an initiative designed to better align education, workforce, and economic development, was funded in House Bill 2121. It dedicated \$20M to expand STEM and computer science education, including teacher professional development for FY 2019.

Standards Alignment

CodeHS Alignment to Pennsylvania CS Standards

All of the main courses offered in the CodeHS 6-12 pathway are aligned to or support the Computer Science Teachers Association (CSTA) K-12 Computer Science Standards, which were adopted by the Pennsylvania Board of Education.

Alignment to Pennsylvania K-12 Standards

codehs.com/standards/framework/PA

Pennsylvania 5-12th CS Pathway

Here are the CodeHS courses that align with Pennsylvania middle school and high school computer science standards for grades 5-12. You can also view this interactive pathway at codehs.com/pennsylvania_pathway.

5th	6th	7th	8th	9th	10th	11th	12th
World of Computing							
	Introduction to the Internet						
	Pennsylvania Course 2						
		Web Design (Matisse)					
				Pennsylvania Course 3A			
				Intro to Computer Science in Python (Rainforest)			
						Pennsylvania Course 3B	
						AP Computer Science Principles	
						Introduction to Cybersecurity (Vigenere)	
						AP® Computer Science A (Mocha)	

Course Overview



World of Computing

Grade Levels: 5th, 6th

The World of Computing course is a first computer science course introducing the basics of programming with Karel the Dog, and allowing students to explore what a computer is and how technology has affected their lives. Students will learn to code using blocks to drag and drop, but they can switch between blocks and text as desired. With a unique focus on creativity, problem solving and project based learning, World of Computing gives students the opportunity to explore several important topics of computing using their own ideas and creativity and develop an interest in computer science that will foster further endeavors in the field.



Introduction to the Internet

Grade Levels: 6th, 7th

Introduction to the Internet is a first computer science course introducing the basics of designing a web page and how information and images are represented with computers. Students will create a portfolio on the web of projects they build throughout the course.



[COMING SOON] Pennsylvania Course 2

Grade Levels: 6th, 7th, 8th

This course is fully aligned to the CSTA 2 standards adopted by the state of Pennsylvania. This course is designed for students in grades 6 through 8. It covers all concepts in the CSTA framework, including: Algorithms & Programming, Computing Systems, Data and Analysis, Impacts of Computing, and Networks & the Internet.



Web Design (Matisse)

Grade Levels: 7th, 8th

This course is fully aligned to the CSTA 2 standards adopted by the state of Pennsylvania. This course is designed for students in grades 6 through 8. It covers all concepts in the CSTA framework, including: Algorithms & Programming, Computing Systems, Data and Analysis, Impacts of Computing, and Networks & the Internet.



Pennsylvania Course 3A

Grade Levels: 9th, 10th

This course is fully aligned to the CSTA 3A standards adopted by the state of Pennsylvania. This course is intended for students in grades 9 and 10. It covers all concepts in the CSTA framework, including: Algorithms & Programming, Computing Systems, Data and Analysis, Impacts of Computing, and Networks & the Internet.



Introduction to Computer Science in Python

Grade Levels: 9th, 10th

The CodeHS Introduction to Computer Science in Python course teaches the fundamentals of computer programming as well as some advanced features of the Python language. Students will develop an appreciation for how computers store and manipulate information by building simple console-based games. This course is equivalent to a semester-long introductory Python course at the college level.



[COMING SOON] Pennsylvania Course 3B

Grade Levels: 11th, 12th

This course is fully aligned to the CSTA 3B standards adopted by the state of Pennsylvania. This course is designed for students in grades 11 and 12. It covers all concepts in the CSTA framework, including: Algorithms & Programming, Computing Systems, Data and Analysis, Impacts of Computing, and Networks & the Internet.



AP Computer Science Principles

Grade Levels: 10th, 11th, 12th

AP Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. With a unique focus on creative problem solving and real-world applications, AP Computer Science Principles prepares students for college and career.



Introduction to Cybersecurity (Vigenere)

Grade Levels: 10th, 11th, 12th

As our world becomes increasingly dependent on technology, cybersecurity is a topic of growing importance. It is crucial that companies and individuals take precautions to protect themselves from the growing threat of cyber attacks. This course prepares students with crucial skills to be responsible citizens in a digital future. The Introduction to Cybersecurity is the first online blended K12 cybersecurity course and is designed for students with some exposure to computer science, but there are no specific course prerequisites.



AP Computer Science in Java (Mocha)

Grade Levels: 11th, 12th

Learn the basics of object-oriented programming with a focus on problem solving and algorithm development. Take this course and prepare to ace the AP Java test.

Explore all free CS course in the CodeHS Course Catalog at
codehs.com/course/catalog

Professional Development

CodeHS' online and in-person professional development helps train teachers to teach excellent computer science courses -- no programming experience required.

Learn more at codehs.com/info/pd

Online PD Courses

The online PD courses are made up of a series of learning modules that cover both the basics of programming and the pedagogy of teaching programming in a blended classroom. Teachers can complete it on own time, during summer, school professional development days, or school holidays.

- Teaching Intro to Computer Science
- Teaching AP Computer Science Principles
- Teaching AP Computer Science A
- Teaching Computing Ideas
- Teaching Intro to Python
- Teaching Web Design
- Teaching Intro to Cybersecurity
- Level 2 Professional Development for CS Teachers



In-Person PD Workshops

The in-person professional development workshops are for districts looking to train multiple computer science teachers. Workshops can be 1 or 2 days, and cover a variety of topics including leveraging blended tools in computer science classes, subject specific topics, how to customize your class using the CodeHS platform, and more.

CodeHS Teacher Love

“ I do want to share with you how refreshing it is to see students celebrate their success. I had students cheering when they got their code to work. As students finished the first part of the Karel exercises, I printed up a little certificate for them. When I presented the certificates in class, they were clapping and cheering for each other. I thought it was really cool...”

- Linda Runatz, Teacher at New Brighton High School in Pennsylvania

“ CodeHS is very responsive to any questions or problems that we are having.”

- Randall Wert, Teacher at Kutztown Area High School in Pennsylvania

Case Study

Mifflin County High School - *Lewistown, Pennsylvania*

With years of professional computer science experience and a flexible teaching style, Kelley Dixon has created a powerful computer science program in Mifflin County.

Read the full story at codehs.com/casestudy/kelleydixon

Facts About Pennsylvania Computer Science

A summary of the computer science landscape in Pennsylvania



Only 30% of schools in Pennsylvania offered AP Computer Science in 2018



4,010 Pennsylvania students took the Advanced Placement Computer Science exams in 2018; only 26% were female



Universities in Pennsylvania did not graduate 1 new teacher prepared to teach computer science in 2016



Pennsylvania has 19,129 open computing jobs, which is nearly four times the state average demand rate

Sources: College Board, Bureau of Labor Statistics, Code.org



CodeHS

Bring a Full Computer Science Program to Your District

Contact us at hello@codehs.com.



Contact Us

We'd be happy to chat more!

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