

# Computer Science Principles with AP Option

**Instructors:** Ryan Garbe  
848-4000 ext. 1205  
ryan.garbe@schools.hermon.net

Code.org's Computer Science Principles is a full-year, rigorous, entry-level course that introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. More than a traditional introduction to programming, it is a rigorous, engaging, and approachable course that explores many of the foundational ideas of computing so all students understand how these concepts are transforming the world we live in. The course covers many topics including the Internet, Big Data and Privacy, Algorithms, Programming and and the societal impacts of computing.

For more information: <https://code.org/educate/csp>

Unit 1	Digital Information
	This unit explores the technical challenges and questions that arise from the need to represent digital information in computers. Learn how complex information like numbers, text, images, and sound are represented in text, how compression works, and the broader social impacts of digitizing the world's information.
Unit 2	The Internet
	This unit reveals how the Internet was designed to connect billions of devices and people to one another. Learn how the different protocols of the Internet work and actually build them yourself using the Internet Simulator. Then consider the impacts the Internet has had, both good and bad, on modern life.
Unit 3	Intro to App Design
	This unit is an introduction to programming and app design with a heavy focus on important skills like debugging, pair programming, and user testing. Learn how to design user interfaces and write event-driven programs in App Lab and then design a project that teaches your classmates about a topic of your choosing.
Unit 4	Variables, Conditionals and Functions
	This unit explores how variables, conditionals, and functions allow for the design of increasingly complex apps. Learn how to program with these three new concepts through a sequence of collaborative activities. Then build your own decision maker app to share with friends and help them make a decision.
Unit 5	List, Loops and Traversals

	This unit introduces lists, loops, and traversals, and explores the way they can be used to build apps that store and process large amounts of information. Learn to program with the data library in App Lab and complete a 5-day hackathon project at the end of the unit where you can design a program about any topic of your choosing.
<b>Unit 6</b>	Algorithms
	This unit is a quick exploration of how computer scientists design algorithms to solve problems and how they analyze the speed of different algorithms. Learn about the concept of algorithmic efficiency through a variety of hands-on activities and learn how it's being applied in modern computing.
<b>Unit 7</b>	Parameters, Returns and Libraries
	This unit introduces parameters, return, and libraries. Learn how to use these concepts to build new kinds of apps as well as libraries of code that you can share with your classmates. End the unit by designing a library of functions around any topic of your choosing.
<b>Unit 8</b>	Create PT Prep
	In this unit prepare for, and do the AP Create Performance Task. Each lesson contains links to helpful documents and activities to help you understand the task and develop a plan for completing it.
<b>Unit 9</b>	Data
	In this unit learn how data analysis helps turn raw data into useful information about the world. Learn how to use data visualization to find patterns inside of data sets and learn how this data analysis process is being used in contexts like open data or machine learning to help make decisions or learn more about our world. In the unit project, you'll analyze a dataset of your choosing and present your findings.
<b>Unit 10</b>	Cybersecurity and Global Impacts
	In this unit learn how computing innovations have impacted our world in beneficial and harmful ways. Learn how data can pose a threat to our privacy and security and the ways that encryption and other techniques are used to protect it. Throughout the unit participate in a "school of the future" conference in which you and a team make a proposal for how best to improve school life with computing innovations.

### **Summative Assessments Retake**

- Summative assessments will be 70% of the grade.
- Students have the opportunity to retake summative assessments.
- The student must submit a retake form to the teacher within five (5) school days of the date that the summative assessment score is reported to the student.
- The highest score a student can receive on a retake or late assessment is a 75.
- The score achieved on a retake will replace the current score (even if the score is lower).
- If a student is making up a test from an absence, that assessment will be graded up to 100.

### **Finals**

- An end of course Final Exam will be conducted, making up 10% of the students overall grade.

### **Make-up Work**

Upon their return to school from an absence, it is the student's responsibility to secure make-up work from their teacher. The due date of the missed work will be one additional class period for each day of absence from that class or at the discretion of the teacher.

### **Grading of Formative Assessments**

- Formative assessments will count as 30% of the grade.
- Formative assessments may be scored on either a 0-100 scale or a 0-4 scale.
- The 0-4 scale will be represented in Power School as 4=100, 3=87, 2=77, and 1=67.
- The method of scoring of formative assessments will be determined by assignment.