

Cape Girardeau School District Online Course Curriculum

Course Name: Principles of Computer Coding

Curriculum Topic and Graduate Goal	Measurable Learner Objective	Instructional Activities / Assessments
<p>The Internet</p> <p>Learn how the multi-layered systems of the Internet function as you collaboratively solve problems and puzzles about encoding and transmitting data, both ‘unplugged’ and using Code.org’s Internet Simulator.</p>	<ol style="list-style-type: none"> <li>1. Students will learn why computers use binary to represent digital information.</li> <li>2. Students will learn how data physically get from one computer to another.</li> <li>3. Students will learn the ways computers represent and transmit data laws of nature or laws of man?</li> <li>4. Students will learn Who and what is “in charge” of the Internet and how it functions.</li> <li>5. Students will learn how information is transmitted from one computer to the other when they are not directly connected.</li> </ol>	<p>Lessons/assessments and other resources are available online at <a href="https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf">https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf</a>.</p>
<p>Digital Information</p> <p>Use a variety of digital tools to look at, generate, clean, and manipulate data to explore the relationship between information and data. Create and use visualizations to identify patterns and trends.</p>	<ol style="list-style-type: none"> <li>1. Students will learn ways in which in which digital information is encoded.</li> <li>2. Students will learn what limitations does the binary encoding of information impose on what can be represented inside a computer.</li> <li>3. Students will learn how to accurately human experience and perception be captured or reflected in digital information?</li> <li>4. Students will learn the relationship between data, information and knowledge.</li> <li>5. Students will learn the best ways to find, see, and extract meaningful trends and patterns from raw data.</li> <li>6. Students will learn where and how does human bias affect the collection, processing and interpretation of data.</li> </ol>	<p>Lessons/assessments and other resources are available online at <a href="https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf">https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf</a>.</p>

<p>Algorithms and Programming</p> <p>Learn the JavaScript language with turtle programming in Code.org’s App Lab coding environment. Learn general principles of algorithms and program design that are applicable to any programming language.</p>	<ol style="list-style-type: none"> <li>1. Students will learn the importance of algorithms.</li> <li>2. Students will learn how is designing an algorithm to solve a problem different from other kinds of problem solving.</li> <li>3. Students will learn how you design a solution for a problem so that it is programmable.</li> <li>4. Students will learn how programmers collaborate.</li> </ol>	<p>Lessons/assessments and other resources are available online at <a href="https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf">https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf</a>.</p>
<p>Big Data and Privacy</p> <p>Research current events around the complex questions related to public policy, law, ethics, and societal impact. Learn the basics of how and why modern encryption works.</p>	<ol style="list-style-type: none"> <li>1. Students will learn what opportunities do large data sets provide for solving problems and creating knowledge.</li> <li>2. Students will learn how cybersecurity is impacting Internet users?</li> <li>3. Students will learn how does cryptography works.</li> </ol>	<p>Lessons/assessments and other resources are available online at <a href="https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf">https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf</a>.</p>
<p>Building Apps</p> <p>The AP Performance Tasks are projects that students submit to the College Board as part of the AP assessment. The Explore task is a small research project about a modern innovation. The Create task a programming project.</p>	<ol style="list-style-type: none"> <li>1. Students will learn how to program apps to respond to user “events”.</li> <li>2. Students will learn how you write programs to make decisions.</li> <li>3. Students will learn creative programming and how people develop, test and debug programs.</li> <li>4. Students learn how real world phenomena is modeled and simulated on a computer.</li> <li>5. Students will learn how to write programs to store and retrieve lots of information.</li> <li>6. Students will learn what are “data structures”?</li> <li>7. Students will learn how algorithms evaluated for “speed”.</li> </ol>	<p>Lessons/assessments and other resources are available online at <a href="https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf">https://code.org/files/CSP_CurriculumGuide_2017_forWeb.pdf</a>.</p>

