

AP Computer Science Principles		
Standards	Fall Semester	
APCSP	Topics Covered	Number of Days
	Classroom rules, procedures, and expectations (syllabus handout) Set up college board accounts	3
	Discuss AP guidelines, performance Task Projects, and Exam Create Code.Org accounts Understanding Innovations and prototypes Set up and log in to code.org accounts Go over AP CSP handbook contents and agreement to be signed by students and parents	3
2.1, 2.3, 3.1, 3.3, 6.1, 6.2	Sending binary bits with simulator Experiment: Coordination and Single-Bit Protocols The 2-bit Message Exchange Challenge! Video - The Internet: Wires Cables and WiF	3
2.1, 2.3	Number systems Reason about patterns and symbols as arbitrary abstract concepts that can be used to represent numbers. Invent their own "number system" with symbols and rules for getting from one pattern to the next.	
2.1, 2.3, 3.1	Binary numbers Presentation: From Circle-Triangle-Square to Binary Construct a Flippy Do (10 mins) Show the Binary Odometer (5 mins) Complete the Binary Practice Activity Guide (15 mins)	3
2.1, 2.3, 3.1, 6.2	Sending numbers Code.org: Review binary numbers. Introduce the Internet Simulator Develop a Number Sending Protocol.	2
2.1, 2.2	Sending Text Code.org: Getting Started Activity Introduce ASCII	2
6.1, 6.2, 7.3, 7.4	The internet KWL the Internet Video: Introducing Vint Cerf Vint Cerf: The Internet is for Everyone Foreshadow the Practice PT: Internet and Society	
6.1, 6.2, 6.3	The need for addressing Introduce "Broadcast Battleship" Battleship Setup Activity: Silent Broadcast Battleship (25 mins)	3
3.3, 6.1, 6.2	Routers and Redundancy Activity Introduce: New Version of the Internet Simulator - Routers Activity: Investigate Routed Traffic	3

6.2	<p>Packets and making a reliable internet</p> <p>Introduce: new version of Internet Simulator - packets and unreliability.</p> <p>Video: The Internet: Packets, Routing, and Reliability</p>	3
6.1, 6.2	<p>The need for DNS</p> <p>DNS Unplugged</p> <p>Discussion</p> <p>DNS in the Internet Simulator</p>	2
6.1, 6.2	<p>HTTP and Abstraction on the internet</p> <p>The Internet Protocol Stack</p> <p>Show Video: "The Internet: HTML and HTTP."</p> <p>Investigate HTTP traffic on your computer</p>	2
6.3, 7.1, 7.4	<p>The internet and society</p> <p>Present the practice PT</p> <p>Practice PT - Flash Talk: The Internet and Society. Suggested Timeline</p> <p>Delivery and Assessment Options.</p>	2
2.1, 3.3	<p>Bytes and file sizes</p> <p>Identify and compare the size of familiar digital media.</p> <p>Solve small word problems that require reasoning about file sizes.</p>	1
2.1, 2.2, 3.1, 3.3, 4.2	<p>Text Compression</p> <p>Use the Text Compression Widget</p> <p>Discuss properties and challenges with compression.</p>	2
1.1, 1.2, 1.3, 2.1, 2.3, 3.1, 3.2, 3.3	<p>Encoding B&W Images</p> <p>Invent An Encoding Scheme for B&W Images</p> <p>Video: The Pixelation widget</p>	2
1.1, 1.2, 1.3, 2.1, 2.3, 3.1, 3.2, 3.3	<p>Encoding Color Images</p> <p>Prompt: How might you encode colors?</p> <p>Video: A Little Bit about Pixels</p> <p>Color Pixelation Widge</p>	1
2.1, 2.3, 3.1, 3.3, 6.1, 6.2, 2.2, 7.3, 7.4, 6.3, 2.1, 4.2, 1.1, 1.2, 1.3,	<p>End of 6WK Assessment</p>	1
3.3. 7.3, 7.5	<p>Lossy vs. Lossless Compression</p> <p>Quick Discovery: Lossy Text Compression</p> <p>Lossless vs. Lossy Compression</p>	2
1.1, 1.2, 2.1, 2.2, 3.2, 3.3, 7.3, 7.5	<p>Rapid Research - Format Showdown</p> <p>Rapid Research - Format Showdown</p> <p>Day 1 - Choose Format, Research, Begin One-Pager</p> <p>Day 2 - Complete One-pager and Computational Artifact</p>	4

4.1, 4.2,5.1	The need for programming languages LEGO Instructions Activity Discussion: Why is writing instructions hard?	2
4.1, 4.2,5.1	The need for algorithms Define: Algorithm Find Min Card Algorithm Discuss - Define a language	2
2.2, 4.1, 5.2	Creativity in algorithms Adding SWAP to Human Machine Language	2
5.1, 5.2, 5.4	Using simple commands Transitioning to Programming Introduce Pair Programming Move to App Lab	2
2.2, 5.3, 5.4	Creating Functions Discussion - The Need for Functions Programming with Functions Introduce Create PT (10 mins)	2
2.2, 5.1, 5.3	Functions and top-down design What Does Efficiency Mean? Distribute Worksheet Transition to Code Studio	1
2.2, 5.1, 5.3	API's and using functions with parameters Activity: Learning the API and Using Functions with Parameters	2
2.2,5.3,5.4	Creating functions with parameters Recall the Purpose of Parameters Writing Functions with Parameters: Under the Sea	1
4.1,5.1, 5.3, 5.4	Looping and random numbers Loops versus Functions Improving Under The Sea with Loops When to use loops versus functions	1
2.2, 4.1, 5.1, 5.3, 5.4	Practice performance task: design a digital scene Review the Project Complete Group Project Planning Guide Start Programming	4
3.2, 7.2, 7.5	What is big data? Video: Big data is better data Activity (30 mins) Exponential Growth and Moore's Law (10 mins)	1
1.1, 1.2, 2.1, 2.2, 3.2, 3.3, 7.3, 7.5, 4.1, 4.2, 5.1, 5.2, 5.4, 5.3, 7.2	End of 6WK Assessment	1

3.1, 3.2	Finding trends with visualizations Introduce: Data Stories Activity (30 mins) Exploring Google Trends	1
3.1, 3.2, 7.4	check your assumptions The Digital Divide and Checking Your Assumptions Part 1: The Digital Divide	1
1.2, 3.2, 7.1 7.4, 7.5	Rapid Research - Data Innovations Rapid Reseach - Data Innovations Day 1 - Choose Innovation, Read and Research Day 2 - Prepare one-pager Presentation (Optional)	5
1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3 , 4.1, 4.2, 5.1, 5.2, 5.3, 5.4, 6.1, 7.1, 7.2, 7.3, 7.4, 7.5	Semester review and final	2