




Cornwall-Lebanon School District Curriculum Overview

High School- AP Computer Science Principles

 length of time in weeks	Concepts & Competencies	Common Assessments	Academic Standards
Unit 1  6	<p style="text-align: center;"><u>Algorithms</u></p> <p>Student will be able to develop an algorithm for implementation in a program.</p> <p>Student will be able to express an algorithm in a language.</p> <p>Student will be able to explain the difference between algorithms that run in a reasonable time and those that do not.</p> <p>Student will be able to explain the difference between solvable and unsolvable problems in computer science.</p> <p>Student will be able to evaluate algorithms analytically and empirically for efficiency, correctness and clarity.</p> <p>Student will be able to explain the existence of undecidable problems in computer science.</p>	<ul style="list-style-type: none"> ➤ Programming Project Completion ➤ Unit 1 Test 	APCSP Learning Objectives: 4.1.1, 4.1.2 4.2.1-4.2.4
Unit 2  9	<p style="text-align: center;"><u>Programming</u></p> <p>Student will be able to develop a program for creative expression, to satisfy personal curiosity or to create new knowledge.</p> <p>Student will be able to develop a correct program to solve problems.</p> <p>Student will be able to collaborate to develop a program.</p> <p>Student will be able to explain how programs implement algorithms.</p> <p>Student will be able to use abstraction to manage complexity in programs.</p> <p>Student will be able to evaluate the correctness of a program.</p> <p>Student will be able to employ appropriate mathematical and logical concepts in programming.</p> <p>Student will be able to apply a creative development process when creating computational artifacts.</p>	<ul style="list-style-type: none"> ➤ Programming Project Completion ➤ Unit 2 Test 	APCSP Learning Objectives: 5.1.1-5.1.3 5.2.1 5.3.1 5.4.1 5.5.1 1.1.1 1.2.1-1.2.5 1.3.1

	<p>Student will be able to create a computational artifact for creative expression.</p> <p>Student will be able to create a computational artifact using computing tools and techniques to solve a problem.</p> <p>Student will be able to create a new computational artifact by combining or modifying existing artifacts.</p> <p>Student will be able to collaborate in the creation of a computational artifact.</p> <p>Student will be able to analyze the correctness, usability, functionality and suitability of computational artifacts.</p> <p>Student will be able to use computing tools and techniques for creative expression.</p>		
Unit 3 <div>9</div>	<p style="text-align: center;"><u>Data and Abstraction</u></p> <p>Student will be able to use computers to process information, find patterns, test hypotheses about digitally processed information to gain insight and knowledge.</p> <p>Student will be able to collaborate when processing information to gain insight and knowledge.</p> <p>Student will be able to explain the insight and knowledge gained from digitally processed data by using appropriate visualizations, notations, precise language.</p> <p>Student will be able to extract information from data to discover and explain connections, patterns or trends.</p> <p>Student will be able to use large data sets to explore and discover information and knowledge.</p> <p>Student will be able to analyze how data representation, storage, security and transmission of data involve computational manipulation of information.</p> <p>Student will be able to describe the variety of abstractions used to represent data.</p> <p>Student will be able to explain how binary sequences are used to represent digital data.</p> <p>Student will be able to develop an abstraction when writing a program or creating other computational artifacts.</p> <p>Student will be able to use multiple levels of abstraction to write programs.</p> <p>Student will be able to identify multiple levels of abstractions that are used when writing programs.</p> <p>Student will be able to use models and simulations to represent phenomena.</p>	<ul style="list-style-type: none"> ➤ Programming Project Completion ➤ Unit 3 Test 	APCSP Learning Objectives: 3.1.1-3.1.3 3.2.1, 3.2.2 3.3.1 2.1.1, 2.1.2 2.2.1-2.2.3 2.3.1, 2.3.2

		Student will be able to use models and simulations to formulate, refine and test hypotheses.		
Unit 4	9	<p><u>The Internet and Global Impact</u></p> <p>Student will be able to explain the abstractions in the Internet and how the Internet functions.</p> <p>Student will be able to explain characteristics of the Internet and the systems built on it.</p> <p>Student will be able to explain how the characteristics of the Internet influence the systems built on it.</p> <p>Student will be able to identify existing cybersecurity concerns and potential options to address these issues with the Internet/the systems built on it.</p> <p>Student will be able to explain how computing innovations affect communication, interaction and cognition.</p> <p>Student will be able to explain how people participate in a problem-solving process that scales.</p> <p>Student will be able to explain how computing has impacted innovations in other fields.</p> <p>Student will be able to analyze the beneficial and harmful effects of computing.</p> <p>Student will be able to explain the connections between computing and economic, social and cultural contexts.</p>	<ul style="list-style-type: none"> ➤ Programming Project Completion ➤ Unit 4 Test 	<p>APCSP Learning Objectives:</p> <p>6.1.1</p> <p>6.2.1, 6.2.2</p> <p>6.3.1</p> <p>7.1.1, 7.1.2</p> <p>7.2.1</p> <p>7.3.1</p> <p>7.4.1</p>