

**Newport-Mesa Unified School District**  
**Office of Secondary Curriculum and Instruction**  
**High School Course of Study**

<b>Course Title</b>	<b>AP Computer Science Principles- Re-Write</b>			<b>Course Code</b>	<i>JT446-JT447</i>
<b>Transcript Title:</b>	<b>APCompSciPrin1AB</b>	<b>Grades Levels:</b>	<b>10-12</b>	<b>Board Adoption Date:</b>	<b>06/11/2019</b>
<b>Content Area:</b>	Computer Technology	<b>GPA Scale:</b>	<b>5.0</b>	<b>Date Course Submitted:</b>	<b>4/1/2019</b>
<b>Credential Required:</b>	<b>CTE</b>	<b>Graduation Subject Areas:</b>	<b>Elective</b>	<b>Cal Pads Code:</b>	<b>8131</b>
<b>UC/CSU "A-G" Area Approvals:</b>	<b>G</b>	<b>School Site/person that wrote and submitted the course:</b>		<b>NHHS</b>	
<b>Recommend Skills:</b>	Exploring Computer Science, Introduction to Computer Science in Python- Concentrator				
<b>Next course(s):</b>	<b>TBD</b>				
<b>Textbook to be used:</b>					

**AP COMPUTER SCIENCE  
PRINCIPLES**

**INDUSTRY SECTOR:** Information and Communication Technologies

Sector **PATHWAY:** Software and Systems Development - Systems

Programming **CALPADS TITLE:** Intermediate Systems

Programming (Concentrator) **CALPADS CODE:** 8131

<b>HOURS:</b>	<b>Total</b>	<b>Classroom</b>	<b>Laboratory/CC/CVE</b>
	180	60	120

<b>JOB TITLE</b>	<b>O*NET CODE</b>	<b>JOB TITLE</b>	<b>O*NET CODE</b>
Electro-Mechanical Technicians	17-3024.00	Computer Operators	43-9011.00
Web Developers	15-1134.00	Video Game Designers	15-1199.11
Computer Network Support Specialists	15-1152.00		

**COURSE DESCRIPTION:**

AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles also gives students the opportunity to use current technologies to create computational artifacts for both self-expression and problem solving. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science.

**A-G APPROVAL:** G

**ARTICULATION:** None **DUAL ENROLLMENT:** None **PREREQUISITES:**

<b>Prerequisite</b>
Exploring Computer Science
Introduction to Computer Science in Python

## METHODS OF INSTRUCTION

- Direct instruction
- Group and individual applied projects
- Multimedia
- Demonstration

## STUDENT EVALUATION:

- Student projects
- Written work
- Exams
- Observation record of student performance
- Completion of assignment

## INDUSTRY CERTIFICATION:

- None

## RECOMMENDED TEXTS:

- CodeHS

## PROGRAM OF STUDY

Grade	Fall	Spring	Year	Course Type	Course Name
9			✓	Introductory	Exploring Computer Science
10			✓	Introductory	Introduction to Computer Science in Python
11			✓	Concentrator	AP Computer Science Principles
12			✓	Capstone	TBD

I.	CREATIVITY	CR	Lab/ CC	Standards
	<ol style="list-style-type: none"> <li>1. Creativity in computing</li> <li>2. Exploration with computing</li> <li>3. Solve problems with computing               <ol style="list-style-type: none"> <li>1. Personal</li> <li>2. Societal</li> <li>3. Global</li> </ol> </li> </ol>	5	20	<p><b>Academic:</b>            LS: 11-12.1, 11-12.2            N-Q: 2</p> <p><b>CTE Anchor:</b>            Problem Solving and Critical Thinking: 5.1, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.12            Health and Safety: 6.3, 6.6, 6.11            Responsibility and Flexibility: 7.3, 7.4            Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7            Leadership and Teamwork: 9.2, 9.3, 9.7            Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b>            C1.1, C1.2, C1.4, C1.5, C1.6, C2.1, C2.2, C2.3, C2.4, C4.5, C4.3, C4.7, C4.6, C4.9, C4.11, C5.2, C5.1, C5.5, C5.6</p>
II.	ABSTRACTION	CR	Lab/ CC	Standards
	<ol style="list-style-type: none"> <li>1. Use Abstraction               <ol style="list-style-type: none"> <li>1. Manage complexity</li> <li>2. For problem solving</li> <li>3. Model the world</li> <li>4. To communicate</li> </ol> </li> <li>2. Use models               <ol style="list-style-type: none"> <li>1. As simulations</li> <li>2. Graphical, textual, and tabular</li> <li>3. Analyze data</li> </ol> </li> </ol>	9	16	<p><b>Academic:</b>            LS: 11-12.1, 11-12.2            WS: 11-12.6, 11-12.7            A-CED: 1, 1.1            A-REI: 1            F-IF: 1, 2, 3            F-LE: 5            G-CO: 12</p> <p><b>CTE Anchor:</b>            Communications: 2.5, 2.7            Technology: 4.1, 4.3, 4.5            Problem Solving and Critical Thinking: 5.1, 5.4, 5.5, 5.6, 5.9            Health and Safety: 6.3, 6.4, 6.5            Responsibility and</p>

				Flexibility: 7.4 Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7 Leadership and Teamwork: 9.6 Technical Knowledge and Skills: 10.1, 10.3, 10.9, 10.11 Demonstration and Application: 11.1, 11.5 <b>CTE Pathway:</b> C6.1, C6.2, C6.3, C6.4, C6.5, C6.6, C6.7, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6
<b>III.</b>	<b>DATA AND INFORMATION</b>	<b>CR</b>	<b>Lab/CC</b>	<b>Standards</b>
	1. Computing as a tool to empower information processing 2. Managing and interpreting data <ol style="list-style-type: none"> <li>1. From art to business to science</li> <li>2. Society and economy</li> </ol> 3. Translate, process, and visualize data	10	15	<b>Academic:</b> LS: 11-12.1, 11-12.2 WS: 11-12.6, 11-12.7 N-Q: 1 N-VM: 6 S-IC: 2, 6 <b>CTE Anchor:</b> Technology: 4.1, 4.3, 4.5 Problem Solving and Critical Thinking: 5.1, 5.4, 5.5, 5.6, 5.9 Health and Safety: 6.3, 6.6, 6.11 Responsibility and Flexibility: 7.4, 7.8 Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7 Leadership and Teamwork: 9.5 Technical Knowledge and Skills: 10.1, 10.6 <b>CTE Pathway:</b> C8.1, C8.2, C8.3, C8.4, C8.5, C8.6, C8.7, C8.8
<b>IV.</b>	<b>ALGORITHMS</b>	<b>CR</b>	<b>Lab/CC</b>	<b>Standards</b>

	<ul style="list-style-type: none"> <li>1. Algorithms <ul style="list-style-type: none"> <li>1. Secure data transmission</li> <li>2. Quick access to data</li> </ul> </li> <li>2. Development and use of algorithms</li> </ul>	10	15	<b>Academic:</b> LS: 11-12.1, 11-12.2 RSIT: 11-12.3 WS: 11-12.6, 11-12.7 A-CED: 2 A-REI: 1 F-IF: 3 <b>CTE Anchor:</b> Communications: 2.3, 2.4 Problem Solving and Critical Thinking: 5.1, 5.2, 5.5, 5.6, 5.8, 5.9, 5.11 Health and Safety: 6.3, 6.6, 6.11 Responsibility and Flexibility: 7.4 Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7 Technical Knowledge and Skills: 10.1, 10.6, 10.8 <b>CTE Pathway:</b> C1.1, C4.10
<b>V.</b>	<b>PROGRAMMING</b>	<b>CR</b>	<b>Lab/ CC</b>	<b>Standards</b>
	<ul style="list-style-type: none"> <li>1. Software <ul style="list-style-type: none"> <li>1. Computational artifacts</li> <li>2. Music</li> <li>3. Images and visualizations</li> <li>4. Explorations</li> </ul> </li> <li>2. Programming Language</li> <li>3. Fundamental programming principles</li> </ul>	10	15	<b>Academic:</b> LS: 11-12.1, 11-12.2 WS: 11-12.6 A-CED: 1 A-REI: 2 G-GMD: 3, 5 G-GPE: 5 G-MG: 3 N-Q: 2 <b>CTE Anchor:</b> Technology: 4.1 Problem Solving and Critical Thinking: 5.1, 5.2, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.12 Health and Safety: 6.3, 6.6, 6.11 Responsibility and Flexibility: 7.3, 7.4 Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7 Leadership and Teamwork: 9.2, 9.3, 9.7

				Technical Knowledge and Skills: 10.1 <b>CTE Pathway:</b> C1.2, C1.3, C1.4, C1.5, C1.6, C1.1, C2.1, C2.2, C2.3, C2.4, C2.5, C3.1, C3.2, C3.3, C4.1, C4.2, C4.11, C4.9, C4.10, C4.7, C4.8, C4.3, C4.4, C4.5, C4.6, C5.1, C5.2, C5.3, C5.6, C5.4, C5.5
<b>VI.</b>	<b>THE INTERNET</b>	<b>CR</b>	<b>Lab/CC</b>	<b>Standards</b>
	1. Internet systems 2. Internet impacts on society 3. Computer networks <ol style="list-style-type: none"> <li>1. Communication</li> <li>2. Collaboration</li> </ol> 4. Cybersecurity	10	15	<b>Academic:</b> LS: 11-12.1, 11-12.2 WS: 11-12.6, 11-12.7 <b>CTE Anchor:</b> Communications: 2.4, 2.5, 2.6, 2.7 Career Planning and Management: 3.8 Technology: 4.1 Problem Solving and Critical Thinking: 5.1, 5.2, 5.5, 5.6, 5.9 Health and Safety: 6.3, 6.6, 6.11 Responsibility and Flexibility: 7.4, 7.8 Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7 Leadership and Teamwork: 9.5 Technical Knowledge and Skills: 10.1, 10.11, 10.12 Demonstration and Application: 11.5 <b>CTE Pathway:</b> C1.6, C1.5, C1.4, C1.3, C1.2, C1.1, C2.2, C2.1, C2.4, C2.3, C2.5, C3.1, C3.2, C3.3, C4.1, C4.2, C4.3, C4.4, C4.5, C4.8, C4.9, C4.6, C4.7, C4.10, C4.11, C5.3, C5.4, C5.5, C5.1, C5.2, C5.6

VII.	GLOBAL IMPACT	CR	Lab/ CC	Standards
	<ol style="list-style-type: none"> <li>1. Global impact               <ol style="list-style-type: none"> <li>1. Think, work, live, and play</li> <li>2. Communication and Collaboration</li> <li>3. Problem Solving</li> <li>4. Doing business</li> </ol> </li> <li>2. Innovations               <ol style="list-style-type: none"> <li>1. New understandings</li> <li>2. New discoveries</li> <li>3. New disciplines</li> <li>4. Benefits and harms</li> </ol> </li> </ol>	5	20	<p><b>Academic:</b>            LS: 11-12.1, 11-12.2, 11-12.3, 11-12.5            RSIT: 11-12.1, 11-12.3            WS: 11-12.6, 11-12.8</p> <p><b>CTE Anchor:</b>            Technology: 4.1, 4.3            Problem Solving and Critical Thinking: 5.1, 5.5, 5.6, 5.9            Health and Safety: 6.3, 6.6, 6.11            Responsibility and Flexibility: 7.4, 7.5            Ethics and Legal Responsibilities: 8.3, 8.4, 8.6, 8.7            Leadership and Teamwork: 9.6            Technical Knowledge and Skills: 10.1, 10.3, 10.9, 10.11            Demonstration and Application: 11.1, 11.5</p> <p><b>CTE Pathway:</b>            C6.1, C6.6, C6.7, C6.4, C6.5, C6.2, C6.3, C7.1, C7.2, C7.5, C7.6, C7.3, C7.4</p>
VIII.	EMPLOYMENT PORTFOLIO	CR	Lab/ CC	Standards
	<ol style="list-style-type: none"> <li>A. Students will prepare a professional portfolio               <ol style="list-style-type: none"> <li>1. Portfolio showcases best professional level work</li> <li>2. Portfolio is organized</li> <li>3. Job application</li> <li>4. Resume</li> <li>5. References</li> </ol> </li> </ol>	1	4	<p><b>Academic:</b>            LS: 11-12.1, 11-12.2, 11-12.3, 11-12.6            RSIT: 11-12.1, 11-12.7            WS: 11-12.2, 11-12.6, 11-12.7</p> <p><b>CTE Anchor:</b>            Communications: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8            Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9            Technology: 4.1,</p>

			<p>4.2, 4.3, 4.4, 4.5, 4.6</p> <p>Responsibility and Flexibility: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8</p> <p>Technical Knowledge and Skills: 10.1, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.11, 10.12, 10.13, 10.14</p> <p>Demonstration and Application: 11.1, 11.2, 11.3, 11.4, 11.5</p> <p><b>CTE Pathway:</b> C6.7, C6.5, C6.6, C6.1, C6.2, C6.3, C6.4, C7.5, C8.7</p>
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**Entered by:**

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