

## Fairfield High School Curriculum Overview – KS4 - Years 10 & 11

Subject	Computer Science	Why do we study these units at KS4?
Lessons per fortnight	6	Students who opted to continue their studies in computing start their GCSE work in Year 10. The GCSE Computer Science syllabus is designed by the AQA examining board and is studied over Years 10 & 11 with two exam papers sat in the summer exam season of Year 11. This course teaches computational thinking and real-world programming. The course provides a challenging specification for students of all ability levels. A range of programming languages are taught but the main language used is Python with pseudocode used in exams.
Setting	Option Subject - Mixed ability teaching	

**Students are encouraged to be Responsible Global Citizens** through numerous links to the sustainable development goals embedded within the KS4 programme of study.

**We ensure all students experience high challenge by** differentiating lessons so that ideas can be extended by all students even those making greater than expected progress.

**Literacy work includes** the introduction of a wide range of computing vocabulary.

**Innovation and Creativity opportunities** are included in lessons and via workshops delivered by local universities and employers.

**Employability opportunities and skills are** highlighted in lessons throughout the course and supplemented with workshops and trips.

Year	Unit title	Knowledge and Understanding/content	Skills	Assessment
10	<b>1 – Fundamentals of Algorithms</b>	<p><b>Representing algorithms</b></p> <ol style="list-style-type: none"> <li>1. Algorithm Flowcharts</li> <li>2. What is meant by an algorithm?</li> <li>3. Taxi Flowchart</li> <li>4. Introduction of pseudocode</li> <li>5. Pseudocode loops</li> <li>6. Array Algorithms</li> <li>7. Display board algorithm</li> <li>8. Pseudocode Exam questions</li> <li>9. Trace Tables</li> <li>10. Pseudocode</li> <li>11. Pseudocode Homework assessment</li> </ol> <p><b>Linear and binary searches</b></p> <ol style="list-style-type: none"> <li>12. How do binary searches work?</li> </ol> <p><b>Sorting Algorithms</b></p> <ol style="list-style-type: none"> <li>13. How to sort algorithms?</li> <li>14. Search algorithms</li> <li>15. Merge &amp; Sorting algorithms</li> </ol>	<ul style="list-style-type: none"> <li>• Safe use of computer systems.</li> <li>• The languages of programming - pseudocode.</li> <li>• The literacy of computing</li> </ul>	<p><b>Evaluation, self-assessment &amp; peer feedback</b></p> <p><b>Pseudocode Homework</b></p> <p><b>End of unit test</b></p>
10	<b>2 Programming</b>	<p><b>Types of data</b></p> <ol style="list-style-type: none"> <li>1. Data types</li> </ol> <p><b>Programming concepts &amp; subroutines</b></p> <ol style="list-style-type: none"> <li>2. Programming concepts</li> <li>3. Validating data with Python</li> <li>4. Introduction to functions</li> <li>5. Develop a subroutine called prefix</li> <li>6. Programme annotation</li> </ol>	<ul style="list-style-type: none"> <li>• GCSE programming language - Python</li> </ul>	<p><b>Evaluation, self-assessment &amp; peer feedback</b></p>







11	<b>8 The Programming Project</b>	<b>Pseudocode</b> <ul style="list-style-type: none"> <li>• A guide to programming in pseudocode</li> <li>• Naming files</li> </ul> <b>Research task</b> <ul style="list-style-type: none"> <li>• Analysis</li> <li>• Design</li> <li>• Testing</li> <li>• Component three write-up</li> </ul>	<ul style="list-style-type: none"> <li>• GCSE programming language - Python</li> </ul>	<b>Evaluation, self-assessment &amp; peer feedback</b> Exam question assessment  <b>End of unit test</b>
<b><u>Text book:</u></b>  GCSE Computer Science book		<b><u>GCSE Computer Science:</u></b>  AQA GCSE Computer Science: <a href="https://www.pgonline.co.uk/resources/computer-science/gcse-aqa/gcse-aqa-computer-science-8525/">https://www.pgonline.co.uk/resources/computer-science/gcse-aqa/gcse-aqa-computer-science-8525/</a>		<b><u>Computer Science specification - 8525</u></b> <ul style="list-style-type: none"> <li>• It is not the expectation that parents buy student books, but you may find it helpful if you are required to study at home for an extended period.</li> </ul>
<b><u>Revision resources:</u></b>  Revision guide  Revision workbook		<b><u>GCSE Computer Science:</u></b>  Revision guide: <a href="https://www.cgpbooks.co.uk/secondary-books/gcse/computer-science/coar42-new-gcse-computer-science-aqa-revision-gu">https://www.cgpbooks.co.uk/secondary-books/gcse/computer-science/coar42-new-gcse-computer-science-aqa-revision-gu</a>  Workbook: <a href="https://www.cgpbooks.co.uk/secondary-books/gcse/computer-science/coaq42-new-gcse-computer-science-aqa-exam-practi">https://www.cgpbooks.co.uk/secondary-books/gcse/computer-science/coaq42-new-gcse-computer-science-aqa-exam-practi</a>		<ul style="list-style-type: none"> <li>• KS4 revision resources are recommended to aid revision as pupils prepare for their GCSE exams in May/June of yr11.</li> </ul>