



<p><b>Computer Science</b></p>	<p><b>Intent</b></p> <ul style="list-style-type: none"> <li>Using analytical and design tools to plan a programmed solution.</li> <li>Independently apply programming tools to a project.</li> <li>Think creatively, innovatively, analytically, logically and critically.</li> <li>Develop understanding of alternative programming paradigms.</li> <li>Gain an understanding of some of the more advanced principles of Computer Science</li> </ul>				
<p><b>Year 13</b></p>	<p><b>Programming (All year)</b></p>	<p><b>Communication and Networking (Sept-Nov)</b></p>	<p><b>Databases and SQL (Sept-Nov)</b></p>	<p><b>Big Data (Dec-Feb)</b></p>	<p><b>Functional programming (Dec-Feb)</b></p>
<p><b>Knowledge</b> (facts, information, concepts and key terminology)</p>	<ul style="list-style-type: none"> <li>OOP</li> <li>Data structures</li> <li>Recursion</li> <li>Interface design</li> </ul>	<ul style="list-style-type: none"> <li>Communication methods</li> <li>Topology</li> <li>WiFi</li> <li>How the internet works</li> <li>TCP/IP, NAT, DHCP, subnetting</li> <li>Application-layer protocols.</li> <li>JSON/XML</li> </ul>	<ul style="list-style-type: none"> <li>Entity, attribute, primary key, foreign key, ERD</li> <li>Normalisation</li> <li>SQL</li> <li>Client-server databases</li> </ul>	<ul style="list-style-type: none"> <li>Volume, velocity, variety</li> <li>Distributed processing</li> <li>Fact-based model</li> <li>Graph schema for capturing structure.</li> </ul>	<ul style="list-style-type: none"> <li>Function type</li> <li>Application and partial application</li> <li>Functions are first-class objects</li> <li>High-order functions</li> <li>Composition</li> <li>Using lists in functional programs.</li> </ul>
<p><b>Understanding</b> (ability to connect and synthesise knowledge within a context)</p>	<ul style="list-style-type: none"> <li>Write imperative and functional programs</li> <li>Write programs using OOP</li> </ul>	<ul style="list-style-type: none"> <li>Define key terms of networking.</li> <li>Explain how WiFi works.</li> <li>Explain how the internet works.</li> <li>Explain methods used to secure data on the internet.</li> <li>Describe protocols used on the internet.</li> </ul>	<ul style="list-style-type: none"> <li>Describe normalisation process up to 3NF.</li> <li>Normalise data from UNF to 3NF.</li> <li>Draw ERD models.</li> <li>Write SQL to CREATE, SELECT, UPDATE and DELETE records.</li> <li>Describe the client-server model for database access.</li> </ul>	<ul style="list-style-type: none"> <li>Explain features of functional programming languages that make them suitable for analysing big data.</li> <li>Draw a graph to represent a dataset.</li> </ul>	<ul style="list-style-type: none"> <li>Write programs that make use of each of the above functional programming techniques in the Haskell language.</li> <li>Describe the operation of a given program written in Haskell.</li> </ul>
<p><b>Formal Assessments</b> (those done by all/vast majority of the cohort)</p>	<p>NEA submitted before Easter.</p>	<p>October formal assessment.</p>	<p>October formal assessment.</p>	<p>February mock exam.</p>	<p>February mock exam.</p>
<p>By the end of the year students on course for at least a grade C will...</p>					