

<b>Exam Board:</b>	AQA
<b>Qualification:</b>	A Level Computing
<b>Assessment Information:</b>	Paper 1 – On-screen 2 hour 30 minutes Paper 2 exam – 2 hour 30 minutes
<a href="#">Link to official specification</a>	

<b>Department Information:</b>
<i>Computing is taught to all KS3 students. Year 7 &amp; 8 have one lesson a week and Year 9 have 3 lessons over a two-week period.</i>
<i>Computing is chosen as an Option for both AQA GCSE and AQA A level.</i>
<i>All lessons are taught by specialist teachers.</i>

<b>ACHIEVE in the curriculum:</b>
<i>Students are expected to be ambitious during their AS and A Level course. They will have opportunities to collaborate on tasks with their peers. In addition, students can demonstrate their integrity, endurance and versatility particularly when it comes to challenging topics e.g. programming.</i>

<b>Curriculum Aims &amp; Intent:</b>
<i>The aim is for students to understand and apply the fundamental principles and concepts of Computer Science, including analysing and solving problems through practical experience by designing, writing and debugging programs.</i>

<b>Resources:</b>
<i>PG Online resources, AQA resources, AQA past papers, the internet, Craig n Dave resources, laptops/computers, revision resources.</i>
<a href="https://isaacomputerscience.org/topics/a_level?examBoard=all&amp;stage=all#aqa">https://isaacomputerscience.org/topics/a_level?examBoard=all&amp;stage=all#aqa</a>

<b>How we keep parents informed:</b>
<i>Year 13 - Progress reports are published 4 times per year, in October, November and February, with a face-to-face parents' evening in December.</i>

<b>How parents can help their child:</b>
<i>Parents/carers can help students by supporting their child's learning and providing a suitable space to study as well as helping them develop good study skills and by encouraging students to be curious and explore topics and applications.</i>

<b>What we study and when:</b>					
<b>Term</b>	<b>Unit, Topic Or Summary Of Work Covered</b>	<b>Knowledge, Understanding &amp; Skills Developed</b>	<b>ACHIEVE / Personal Development Focus</b>	<b>How The Work Is Assessed</b>	<b>Careers Links</b>
<b>1</b>	4.14 NEA  4.13 Systematic approach to problem solving	Development of the computing practical project. Work on the project will run in parallel with study of other topics.  Understand the concept of abstract data types. Define and use user-defined data types	Ambitious, Collaborative, Integrity, Versatility and Excellence. Endurance and Happy when problems are solved.	NEA	IT Industry - Information Systems, Systems Development, Systems Analyst, Programmers, Developers, Database

	<p>4.1 Programming Fundamentals</p> <p>4.2 Data structures and abstract data types</p> <p>4.5 Fundamentals of data representation</p> <p>Numbers with a fractional part</p>	<p>To be familiar with and be able to use the fundamentals of programming, including OOP and class diagrams.</p> <p>Be familiar with and use the data structures listed:  Data structures  Single and multi-dimensional arrays  Fields, records and files  Abstract data types  Queue  Stack  Vectors.</p> <p>Understands and applies:  Number systems  Units of information  Binary number system  Representing images, sound and other data  ADC and DAC.  Compression.  Encryption.</p> <p>Describe representation in fixed point and floating-point form.  Describe and explain the use of: parity bits, majority voting and check digits.</p>	<p>Ambitious, Collaborative, Integrity, Versatility and Endurance.</p>	<p>Review/Test</p>	<p>Management, Media, Education. Safe Disposal of Technology.</p> <p>IT Industry</p>
2	<p>4.6 Fundamentals of computer systems</p>	<p>Understand the relationship between hardware and software.  Be able to classify programming languages.  Logic gates. Be able to construct truth tables and logic gate circuit diagrams.  Write Boolean expressions.  Have an understanding and knowledge of the basic computer system components.</p>	<p>Ambitious, Endurance, Versatility and Excellence</p>	<p>Review/Test after each topic.</p>	<p>IT Industry</p>

	4.7 Fundamentals of computer organisation and architecture	Be able to explain the difference between von Neumann and Harvard architectures. Be able to describe the stored concept. Explain the structure and role of the processor.			
<b>3</b>	4.3 Fundamentals of algorithms  4.4 Theory of computation	Be able to describe and trace a range of algorithms and analyse their complexity, including graphs and trees. Sorting algorithms. Understand and be able to trace Dijkstra's shortest path algorithm. Be familiar with Turing Machine.  Problem solve and create solutions using computational thinking skills including abstraction, decompositions, automation. To be able to draw and interpret diagrams and tables for finite state machines. To be familiar with the concept of notations for regular expressions. Check syntax referring to Backus Naus Form (BNF). Maths for understanding Big-0 notation. To be able to describe the Halting problem. To be familiar with the structure and use of Turing machines. The Halting problem.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry - Information Systems, Systems Development, Systems Analyst, Programmers, Developers, cybersecurity, Database Management, Media, Education. Safe Disposal of Technology.
<b>4</b>	4.10 Fundamentals of databases  4.11 Big Data  4.12 Functional Programming	Model, describe, explain and normalise relational databases; Use SQL with multiple tables. Discuss concurrent access in a client-server database.  Describe the various meanings of Big Data.  Functional programming practice.  Study the pre-release at appropriate times.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry

	<p>Paper 1 Pre-release study</p> <p>4.9 Communication</p> <p>4.8 Consequences of uses of computing</p>	<p>Describe communication methods. Understand networking. Describe: WiFi The internet TCP/IP, DHCP, NAT Thick vs thin client computing</p> <p>Show awareness of current moral, social, legal and cultural risks of computing.</p>			
<b>5</b>	Exams	<p>Functional programming practice.</p> <p>Exam revision /Exams.</p>	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry
<b>6</b>	Exams	Exam revision/Exams.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry