

Exam Board: AQA
Qualification: A Level Computing
Assessment Information: Paper 1 – On-screen 1 hour 45minutes
 Paper 2 exam – 1 hour 30 minutes

[Link to official specification](#)

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

ACHIEVE in the curriculum:
 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.

Curriculum Aims & Intent:
 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.

Resources:
 PG Online resources, AQA resources, AQA past papers, the internet, Craig n Dave resources, laptops/computers, revision resources.
https://isaacomputerscience.org/topics/a_level?examBoard=all&stage=all#aqa

How we keep parents informed:
 Year 12 - Progress reports are published 4 times per year, in October, January, March and July, with a face-to-face parents' evening in November.

How parents can help their child:
 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.

What we study and when:

| Term | Unit, Topic Or Summary Of Work Covered | Knowledge, Understanding & Skills Developed | ACHIEVE / Personal Development Focus | How The Work Is Assessed | Careers Links |
|------|---|---|---|-------------------------------|--|
| 1 | 3.1.1.1–14 Programming 3.2.1-3 Fundamentals of data structures, including arrays and text files 3.5.1 Number systems | Understands the concepts, operations and data constructs to complete programs. Gain experience of using the concept of data structures, including single and multi-dimensional arrays and text files. Be familiar with the concept of a natural numbers. Be familiar with the concept of a real numbers. | Ambitious, Collaborative, Integrity, Versatility and Excellence. Endurance and Happy when problems are solved. | Review/Test after each topic. | IT Industry - Information Systems, Systems Development, Systems Analyst, Programmers, Developers, Database |

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| | <p>3.5.2 Number bases</p> <p>3.5.3 Units of information</p> <p>3.5.4 Binary number system</p> <p>3.5.5 Coding systems</p> <p>3.5.6 Representing images, sound and other data</p> | <p>Be familiar with the use of:</p> <ul style="list-style-type: none"> • natural numbers for counting • real numbers for measurement. <p>Be familiar with the concept of number bases. Convert between decimal, binary and hexadecimal number bases. Be able to convert between number bases.</p> <p>Understand bits and bytes. Know that quantities of bytes.</p> <p>Be able to:</p> <ul style="list-style-type: none"> • add two unsigned binary integers • multiply two unsigned binary integers <p>Differentiate between the character code representation of a decimal digit and its pure binary representation. Describe ASCII and Unicode coding systems for coding character data and explain why Unicode was introduced. Describe and use parity bits, majority voting and check digits.</p> <p>Describe how bit patterns may represent other forms of data, including graphics and sound. Explain how bitmaps are represented. Explain the digital representation of sound. Describe the purpose of MIDI. Explain the principles behind techniques for lossless compression. Understand what is meant by ciphers and encryption and be able to define it.</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> |
| <p>2</p> | <p>3.6.1.1-4 Hardware and software</p> | <p>Fundamentals of software and hardware. Explain what is meant by:</p> <ul style="list-style-type: none"> • system software • application software. <p>Describe the need for, and functions of system software.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Review/Test</p> | <p>IT Industry</p> |

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| | <p>3.6.2 Classification of programming languages</p> <p>3.6.3 Types of program translator</p> <p>3.6.4 Logic Gates</p> <p>3.7.1 Internal hardware components of a computer</p> <p>3.7.2 The meaning of the stored program concept</p> | <p>Describe the role of the operating system.</p> <p>Show awareness of the development of types of programming languages and their classification into low- and high-level languages.</p> <p>Understand the role of each of the following:</p> <ul style="list-style-type: none"> • assembler • compiler • interpreter. <p>Know the logic Gates and be able to construct logic gate circuit diagrams. Be able to construct truth tables and Boolean expressions.</p> <p>Have an understanding and knowledge of the basic internal components of a computer system, and how they relate to each other.</p> <p>Be able to describe the stored program concept.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Review/Test</p> | <p>IT Industry</p> |
| <p>3</p> | <p>3.7.3 The processor and its components</p> <p>3.7.4 Input and output devices</p> | <p>Explain the role and operation of a processor and its major components:</p> <ul style="list-style-type: none"> • arithmetic logic unit • control unit • clock • general-purpose registers • dedicated registers <p>Explain how the Fetch-Execute cycle is used. Understand and apply the basic machine-code operations including logic operators.</p> <p>Know the main characteristics, purposes and suitability of the devices and understand their principles of operation.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Test/Review</p> | <p>IT Industry -</p> |

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| | <p>Secondary Storage</p> <p>3.9 Fundamentals of communication and networking</p> <p>3.9.2 Network Topologies</p> <p>WiFi</p> | <p>Explain the need for secondary storage within a computer system.</p> <p>Define serial and parallel transmission methods. Define communication basics.</p> <p>Understands different network topologies. Understands:</p> <ul style="list-style-type: none"> • peer-to-peer networking • client-server networking. <p>Explain the purpose of WiFi and the components required for wireless networking.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Test/Review</p> | <p>IT Industry</p> |
| 4 | <p>3.8 Consequences of uses of computing</p> <p>Programming Practice</p> | <p>Show awareness of current individual (moral), social (ethical), legal and cultural opportunities and risks of computing. Understand that developments in computer science and the digital technologies have dramatically altered the shape of communications and information flows in societies, enabling massive transformations. Understand what is meant by the digital divide and able to discuss challenges.</p> <p>Programming challenges.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Test/Review</p> | <p>IT Industry</p> |
| 5 | <p>3.8 Consequences of uses of computing</p> <p>Programming</p> | <p>Show awareness of current individual (moral), social (ethical), legal and cultural opportunities and risks of computing. Understand that developments in computer science and the digital technologies have dramatically altered the shape of communications and information flows in societies, enabling massive transformations. Understand what is meant by the digital divide. Be able to discuss the challenges facing legislators in the digital age.</p> <p>Further Programming practice.</p> | <p>Ambitious, Endurance, Versatility and Excellence.</p> | <p>Test/ Review</p> | <p>IT Industry</p> |

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| | Exams practice / Exams | Exam Practice/Exams | | | |
| 6 | 3.3 Software Development NEA | Understand aspects of software development and SDLC. Commence NEA. Work on this over the summer. | Ambitious, Endurance, Versatility and Excellence. | Internal assessment. | |