Computing A Level Key Stage 5 Curriculum Plan Year 12

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://isaaccomputerscience.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

		Be familiar with the use of: • natural numbers for counting • real numbers for measurement.			Management, Media, Education. Safe Disposal of Technology.
	3.5.2 Number bases	Be familiar with the concept of number bases. Convert between decimal, binary and hexadecimal number bases. Be able to convert between number bases.			
	3.5.3 Units of information	Understand bits and bytes. Know that quantities of bytes.			
	3.5.4 Binary number system	Be able to: • add two unsigned binary integers • multiply two unsigned binary integers			
	3.5.5 Coding systems	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.			
	3.5.6 Representing images, sound and other data	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.	Ambitious, Collaborative, Integrity, Versatility and Endurance.	Review/Test	IT Industry
2	3.6.1.1-4 Hardware and software	Fundamentals of software and hardware. Explain what is meant by: • system software • application software. Describe the need for, and functions of system software.	Ambitious, Endurance, Versatility and Excellence.	Review/Test	IT Industry

		Describe the role of the operating system.			
	3.6.2 Classification of programming languages	Show awareness of the development of types of programming languages and their classification into low- and high-level languages.			
	3.6.3 Types of program translator	Understand the role of each of the following: • assembler • compiler • interpreter.			
	3.6.4 Logic Gates	Know the logic Gates and be able to construct logic gate circuit diagrams. Be able to construct truth tables and Boolean expressions.	Ambitious, Endurance, Versatility and Excellence.	Review/Test	IT Industry
	3.7.1 Internal hardware components of a computer	Have an understanding and knowledge of the basic internal components of a computer system, and how they relate to each other.			
	3.7.2 The meaning of the stored program concept	Be able to describe the stored program concept.			
3	3.7.3 The processor and its components	Explain the role and operation of a processor and its major components: • arithmetic logic unit • control unit • clock • general-purpose registers • dedicated registers Explain how the Fetch-Execute cycle is used. Understand and apply the basic machine-code operations including logic operators.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry -
	3.7.4 Input and output devices	Know the main characteristics, purposes and suitability of the devices and understand their principles of operation.			

	Secondary Storage 3.9 Fundamentals of communication and networking 3.9.2 Network Topologies WiFi	Explain the need for secondary storage within a computer system. Define serial and parallel transmission methods. Define communication basics. Understands different network topologies. Understands: • peer-to-peer networking • client-server networking. Explain the purpose of WiFi and the components required for wireless networking.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry
4	3.8 Consequences of uses of computing Programming Practice	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. Programming challenges.	Ambitious, Endurance, Versatility and Excellence.	Test/Review	IT Industry
5	3.8 Consequences of uses of computing Programming	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. Further Programming practice.	Ambitious, Endurance, Versatility and Excellence.	Test/ Review	IT Industry

	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.	