Computing

Computing - AS and Advanced Level. AQA 5511, 6511.

The aims of the Computing AS course for candidates are to:

a. develop an understanding of the main principles of solving problems using computers;
b. develop an understanding of the range of applications of computers and the effects of their use;
c. develop an understanding of the organisation of computer systems including software, data, hardware, communications and people;
d. acquire the skills necessary to apply this understanding to developing computer-based solutions to problems.

In addition, the A Level encourages candidates to:

e. develop an understanding of the main principles of systems analysis and design, methods of problem formulation and planning of solutions using computers, and systematic methods of implementation, testing and documentation;
f. develop their capacity for critical thinking, see relationships between different aspects of the subject and perceive their field of study in a broader perspective;
g. develop their project management skills and understanding of the need for team working.

Pre-requisites to enter the AS level course:

Students should have at least a grade B in the Higher Tier of Mathematics GCSE.

Pre-requisites to enter the A2 level course:

Students should have gained at least an overall D grade in the AS level Computing course.

AS Computing aims to give students a general understanding of how computers work, the role of Operating Systems and Networking principles. Also, it focuses on the ethics of computer use and its statutory requirements. Standard application software, such as word-processing, spreadsheets and databases, is used, but students learn the basics of systems analysis and programming. The latter being the most interesting part of the course for students. The introduction to programming is through a microprocessor simulator, which leads to using a high level programming language (either Visual Basic or Java) to illustrate data structures, assignment statements, variables, constants, declarations, selection, iteration, procedures and functions, parameter passing, and standard methods of breaking down a problem into an algorithm. These are tested through a practical problem from AQA. This is an exciting course. Successful candidates should be ready to learn various facts and concepts and be prepared for the frustration and exhilaration of programming for which an ability to deal with algebra is a good indication of competence.

The **A2 Computing** course is similar in structure to the AS course, but it goes into more depth and students will need to take their studies seriously, as more concepts are involved and the exam questions are more searching. The practical project is an opportunity to produce a substantial piece of work where techniques and skills learnt over the previous year should be applied. Dedicated students produce outstanding pieces of work that are solutions to real world problems.

Computing A level is a good introduction to taking Computing at University whether as a main subject or subsidiary one. It is also a good problem solving and presentation course in its own right.

Units 1, 2 and 3 make up the AS Computing course.
Units 4, 5 and 6 make up the A2 Computing course.

	Topic	Contents	Assessment
1	**Computer Systems, Programming and Networking Concepts**	Computer systems, Programming Information and Data Representation Communication and Networking	1 1/2 hours. Short answer question and structured questions. 35% if total AS marks (17.5% of total A level marks)
2	**Principles of Hardware, Software and Applications**	Applications and Effects Files and databases Operating Systems Hardware Devices	1 1/2 hours. Short answer question and structured questions. 35% if total AS marks (17.5% of total A level marks)
3	**Practical Systems Development**	A Practical Exercise will be set by AQA and published each year in the Specification document. The Exercise will be different each year but will always be based on the content of Modules 1, 2 and 3. The Exercise will require candidates to demonstrate at least two of the skills of: analysing, designing, implementing, testing, evaluating, using appropriate software	1 1/2 hours. Externally assessed Practical Exercise. 30% of total AS marks (15% of the total AS marks. 15% of the total A marks
4	**Processing and Programming Techniques**	Machine Level Structure, Programming Concepts, Machine operation and Assembly Language, Data Representation in Computers, Operating Systems	1 1/2 hours. Short answer question and structured questions. 15% of total A level marks
5	**Advanced System Development**	Applications and effects, Files and databases, Systems Development, Hardware Devices, Networking	1 1/2 hours. Short answer question and structured questions. 15% of total A marks
6	**The Practical Project**	A substantial piece of work done over an extended period of time to test the skills of analysing, designing, implementing, testing, evaluating systems	Centre assessed Project 20% of total A level marks. Unit 6 and either Unit 4 or Unit 5 must be taken at the end of the course in the final examination session