Computer Science

Level: A2 Level
Awarding Body: AQA

This course is intended to be of interest and value to students whether or not they progress to further studies in Computing, and to provide a sound foundation in both practical and theoretical aspects of Computing

Students taking this course learn to program to a high level. They also develop excellent numeracy, critical thinking and analysis. They learn about project management and report writing and also become more perceptive about the importance of technology and how the microchip has become essential for modern living.

The course enables students to develop:-

- An understanding of the main principles of solving problems using computers,
- An understanding of the range of computer applications, their effects of their use,
- An understanding of the organisation of computers, including software, data, hardware, communications and people,
- The skills necessary to apply this understanding to develop computer-based solutions to problems.

In addition, the A Level encourages candidates to develop

- An understanding of problem-solving techniques and strategies for the provision of solutions using computers
- A capacity for critical thinking, seeing relationships between different aspects of their subject and perceiving their field of study in a broader perspective.
- Project management skills and an understanding of the need for team working.

Course Content

1) Programming
2) Data structures
3) Algorithms
4) Theory of computation
5) Data representation
6) Computer systems
7) Computer organisation and architecture
8) Consequences of uses of computing
9) Communication and networking
10) Databases
11) Big Data
12) Functional programming
13) Systematic approach to problem solving

Assessment

Students sit exams at the end of year 12, and progression to year 13 is dependent upon successful results.

The A Level is wholly assessed towards the end of year 13, and comprises the following modules:-

1) Online Exam (40%) Students answer a series of programming theory questions and then use their coding skills to write and adapt a series of programs and sub-procedures. (150 minutes duration)

2) Written Exam (40%) Students answer short and extended theory questions on the topics that they have studied throughout the course. (150 minutes duration)

3) Coursework (20%) Students use their programming skills to solve a real life problem, as well as learning project management skills.

Progression

This course is ideal for those with an aptitude or interest in computers and should be the first choice for those who wish to take the subject further either educationally or as a career option. It and also offers significant skill development for those taking the subject for university entry. The skills developed are used directly in many areas of science, maths, engineering and electronics. There is an extremely high demand for students with a computing background.

Entry Requirements

Students considering taking this course should have minimum GCSE grades in Computer Science or ICT at a level 6 (or Grade B) as long as the ICT GCSE content included programming in a high level text based programming language, and a Level 6 (or Grade B) in Math's GCSE. Pupils must have undertaken their GCSE work the year prior to starting the A level Computer Science course.

Contact

For further information please contact Mr. P. Hughes, Head of Faculty.