

Computing

Title of course: Computing

Qualification/level at the end of the course: GCSE

Course description: Theory - Computer Systems (Exam - 50%) and Computational thinking, algorithms and programming (Exam - 50%)

This unit covers the body of knowledge about computer systems, computational thinking, algorithms and programming on which the examinations will be based. The following topics will be covered in theory lessons: computer systems - systems architecture, memory, storage, wired and wireless networks, network topologies, protocols and layers, system security, system software, ethical, legal, cultural and environmental concerns, computational thinking, algorithms and programming - algorithms, programming techniques, producing robust programs, computational logic, translators and facilities of languages and data representation.

Programming project

Students will be issued a range of assessment tasks each consisting of up to three sub tasks. Students will need to create suitable algorithms (flowcharts & pseudocode) that will provide a solution to the stated problem then program their solutions in the Python programming language. Students will test their program at each stage to ensure they solve the stated problem using a suitable test plan with appropriate test data and then create an evaluation based on this data. This project doesn't contribute towards the final grade but enables students to develop some fundamental programming skills.

Skills required:

- Logic and problem solving - computers are just a series of logical circuits with electrical currents
- A love for how things work - you will be exploring how computers do the things they do
- Perseverance - this is not an easy course. Don't give up easily when something doesn't work
- Team-working skills - you will need to work with others to learn new concepts and develop code
- Creativity - most problems have multiple solutions. You will need to think outside the box
- Independence - you will need to refine and improve your knowledge & skills outside of lessons
- Read and write a lot of code - want to develop the next Facebook? You better start coding now!

Assessment:

- Computer systems and programming – 100% written exams in year 11
- Programming project

Essential requirements: This qualification is suitable for students who are on track to achieve a grade 7 - 9 in GCSE Mathematics.

Pre-course links:

- <http://www.cambridge.org/gcse-computing/>
- <http://cambridgegcsecomputing.org/>
- http://www.teach-ict.com/gcse_computing.html
- <http://code.org/>
- <http://www.codecademy.com/>
- <https://www.python.org/>

