GCSE Computer Science

Course code: OCR J277

Aims:

- Engaging and practical GCSE course that encourages creativity and problem solving
- Students develop their understanding and application of the core concepts of Computer Science
- Students will analyse problems in computational terms and devise solutions by designing, writing, testing and evaluating programs

Content:

Students will cover two theory units: "Computer Systems" and "Computational Thinking, Algorithms and Programming". Within these two units, students must undertake some practical programming tasks. Although the programming is not formally assessed it is an essential part of the Computer Science GCSE course, which allows them to develop their skills to design, write, test and refine programs using high-level programming language. Students will be assessed on these skills during the written examinations.

Curriculum Map

Year	Curriculum Overview	Assessment
Year 10	Boolean Logic Data storage (numbers, characters, images, sound, compression) Designing, creating and refining algorithms Architecture of the CPU Data types Primary and Secondary storage Networks and topologies Wired and wireless networks Practical programming skills	Online formative feedback x 3 Assessed extended learning x2 Written end of term exam x2 Written end of Year 10 exam
Year 11	Threats to Computer Systems and networks Defensive design Operating systems Testing Ethical, legal, cultural and environmental impact Languages Searching and sorting algorithms Practical programming skills	Online formative feedback x 2 Assessed extended learning x1 Written end of term exam x1 Written mock exam x1

Assessment:

There are 2 written examinations, worth 50% each, and both having a total of 80 marks. Each written exam paper lasts for 1 hour 30 minutes:

1) J277/O1 Computing Systems – this question paper consists of short and medium answer questions. There is one 8-mark extended response question that enables students to demonstrate the ability to construct and develop a sustained line of reasoning.

2) J277/02 Computational Thinking, Algorithms and Programming – this question paper consists of short and medium answer questions. Section A is worth 50 marks and assesses students' knowledge and understanding of concepts of Computer Science. Section B is worth 30 marks, and assesses students' practical programming skills and their ability to design, write, test and refine programs

Extended Learning:

Extended learning will be a mixture of tasks on Yacapaca, programming tasks and written questions. As a Computer Science student you will be using Teams to submit and receive feedback on both classwork and extended learning tasks. Students should expect to complete some programming tasks as part of their extended learning, which will develop and challenge their understanding from lessons. The formal GCSE assessment is two written exam papers, so students should be prepared to undertake some short and medium response questions without a computer as part of their extended learning.

Connection to the JTFS Approach

Whole School Theme	How does Computer Science support this?
STRIPE	Computer Science GCSE is a demanding course that will require students to have good self-manager and resilience as they tackle programming using high-level languages. Students will need to demonstrate an innovative and creative nature to their problem solving, as well as enquirer skills when having to puzzle through new topics.
STEAM	Computing is an activity which provides employment for millions of people, directly and indirectly with strong connections to science, technology, engineering, art and mathematics.
Literacy	To be digitally literate is to have access to a range of practices and cultural resources that students are able to apply to digital tools. It is the ability to make and share meaning in different modes and formats; to create, collaborate and communicate effectively and to understand how and when digital technologies can be best used to support these processes.
Numeracy	Computational thinking overlaps a lot with the way mathematicians think. Both are ultimately about solving problems. There are elements of the GCSE Computer Science course that will require mathematical understanding such as sorting algorithms and data storage.
SMSC, British Values and Citizenship	Developing students to become digital literate providing skills, knowledge and understanding that will help them to take on a full and active part in social, cultural, economic, civic and intellectual life now and in the future.