Curriculum Overview

Year 11 – Computer Science 2021-22

Rationale for Year 11 Computer Science

With technology becoming ever more advanced within the work place, it is important for students to be equipped with the necessary skills for employment within the 21st century economy. Furthermore, a GCSE in computer science is highly sought after and a necessary prerequisite for level 3 Computer Science qualifications. The national curriculum for Computer Science was introduced in 2013 and it is recognised as an EBACC subject, counting as a science subject in this regard. The new OCR syllabus (J277) has been implemented for first teaching September 2020, and first examination in Summer 2022. This is a well-recognised course which aims to: develop computational thinking using abstraction, decomposition and algorithmic thinking with the aim to improve problem solving, develop understanding of legal, ethical and cultural issues in relation to computers, develop understanding of digital systems, including how the Central Processing Unit (CPU) works, and how the different components communicate, and improve digital literacy in order to help students to improve future aspirations.

What will students learn and why?

Students will learn a mixture of theory and practical topics from the OCR GCSE syllabus. In a world that is being dominated by technology, threats to your personal data and network are growing at an alarming rate. It is important to understand these threats to be able to defend yourself against them. Students will learn about different threats to both computers and networks, as well as ways in which to prevent themselves from becoming victim to them. It is also important to have a respect for the issues surrounding computing. This second year of the course focuses more on component 2 elements such as computational thinking and designing, creating and refining algorithms. In terms of programming, students will put the skills they learned last year into practice by completing a series of programming tasks, interleaved throughout the year. The aim for this is to not only practise their programming skills, but to allow them to practise creating robust programs by using defensive designs (using techniques such as naming conventions, and authentication), and test their codes effectively to allow for any error that may occur.

How will students learn?

The GCSE is split into 2 components. Component 1 (Computer systems) focusses on how the computer runs, and is relatively content based. Whereas Component 2 (Computational thinking, algorithms and programming) is very much skills based, and looks at solving problems using computational thinking and Programming. Although Year 11 is biased towards component 2, as a lot of component 1 was covered in Year 10, the topics are sequenced to allow a mixture of the two components to be covered. Students will make use of case studies, and complete extensive exam practice during this year, as a strategy for GCSE success. The full GCSE course will have been taught by the Spring term, allowing sufficient time for effective revision and exam practice on both the practical programming skills and the theory revision.

How will students be assessed?

Students will be assessed using end of topic quizzes, as well as from the OCR exam builder to create customised practice exams at the end of each full term. A mock exam will be set during January to allow students a full two paper practice experience of the Computer Science exam. Once the content has been taught and revision has begun, student will be making use of this time by maximising exam practice, and studying exam questions, as well as mark schemes/examiner feedback, to allow them to get a clearer idea of the manner in which the questions should be answered. In order to support exam practice, and aid confidence in tackling the exam, students will also have available to them a series of pre-seen papers, where we will look at a copy of a paper together in class, and discuss how to answer each question in turn. They will then sit a similar paper a short while after.

What is the aim for learners by the end of the year in comparison to the previous year?

Students will have a clearer idea of programming allowing them to not only create a program, but to create a good and efficient program, which has been tested effectively. Students will also have a clearer understanding on computers in the world, opening their mind as possible issues it may cause as well as the many benefits it holds. As well as the real world skills they will gain, they will also obtain the necessary skills to be able to sit their GCSE paper successfully, and have obtained the ability to continue to pursue the subject further, through A level and beyond.