Computer Science

COMPUTER SCIENCE DEPARTMENT
Head of Department: Mr M Peddle

Why choose the subject?	Computer Science is about problem solving with computer technology and computational thinking. Students develop their coding skills with Python and other languages to create solutions in a variety of business, scientific and social contexts. Students will enjoy the freedom and the creative challenges Computer Science offers. We also study the social consequences of the uses and abuses of computing technologies for the wider world, issues such as cyber-security, fake news and applications of Artificial Intelligence. Students choose their own project in the non-exam assessment. These have included: animations to simulate scientific concepts, building a social networking platform, route planning apps and using Artificial Intelligence to predict sports results. Computer Science provides transferrable skills in analysis and project management that are appreciated in any career. There are skill shortages in all areas of computing in the UK and globally, with employers' particularly welcoming women applicants. The Fawcett Society recently reported that the gender pay gap in IT is significantly lower than in most careers and the best way for women to close the gender pay gap is to choose STEM subjects.
Who is eligible?	Students following this specification do not need to have any prior knowledge of Computer Science. Students who are likely to succeed will enjoy mathematics and logical thinking. Successful students must be curious about how technologies work for people, ready to experiment and ready to help transform the future.

A LEVEL QUALIFICATION

Year 2019/21 Advanced Level Award
Examination Board: AQA 7517

Paper 1:	Assessed:
Fundamentals of programming Fundamentals of data structures Fundamentals of algorithms Theory of computation Fundamentals of functional programming Systematic approach to problem solving	On-screen exam 2 hours 30 minutes 40% of A-level Students answer a series of short questions and write/adapt/extend programs in an electronic answer document provided by AQA.
Paper 2:	**Assessed:**
Fundamentals of data representation Fundamentals of computer systems Fundamentals of computer organisation and architecture Consequences of uses of computing Fundamentals of communication and networking Fundamentals of databases Big Data Fundamentals of functional programming	Written exam 2 hours 30 minutes 40% of A-level Compulsory short-answer and extended-answer questions.
Non-exam assessment:	**Assessed:**
Students will be expected to follow a systematic approach to solve or investigate a practical problem of their own choice.	75 marks 20% of A-level

Students taking Computing say….

"Computer Science is really enjoyable and the programming has been really easy to learn despite having little prior knowledge. There is a good balance between the theory and practical aspects of the course, both of which complement each other so that you can gain a deeper understanding in all topics. The teachers are always on hand to help with anything that we're struggling with which means that we are all able to consolidate our knowledge before we move on to something new."

"As I did computer science at GCSE, I already had an insight into what computer science was and what it was based around. This originally helped me within the first few lessons as the content we were learning was just a small step up from GCSE. However, from that point on, we were covering things we had never learned before (or had only a basic understanding in it) so this meant the whole class was at the same level, regardless if they had done the GCSE or not. I really enjoy computer science and I think it's a great option to take if you are interested in computers and how they work. "

"When starting computer science, the teachers started practically from base 0 which meant that even if you hadn't done anything like it before, you weren't left behind. If you were picking up on concepts quicker than others you get extensions so everyone has something to do that is challenging but helps them to learn. At the same time, if you didn't know what was going on, they would help you understand it."

"Taking computer science at A-Level is really enjoyable, and covers a much wider range of work than you'd probably expect. It's also really useful for later life, and a valuable subject to continue with regards to job applications (it's an industry which is rapidly developing and which covers far more than just the programming element). If it's not something which you'd continue at university, it's still interesting and fun to study, and a lot of what you learn is applicable to other subjects (particularly maths/further maths). Additionally, it's a surprisingly easy subject to transition to, because it's logical and therefore easier to understand: even with no prior experience, you can pick up the basics really quickly."