

Computer Science

COMPUTER SCIENCE DEPARTMENT

Head of Department: Mr S. Shields

Why choose the subject? The course is not about learning to use tools or just training in a programming language. Instead the emphasis is on computational thinking. Computational thinking is a kind of reasoning used by both humans and machines. Thinking computationally is an important life skill. The study of computation is about what can be computed and how to compute it. Computer Science involves questions that have the potential to change how we view the world. Students choosing Computer Science are opening up a world of possibilities that will lead either to enhanced career prospects in their chosen fields or direct employment in the exciting and ever-changing world of information technology, multi-media and gaming.

Who is eligible? Students following this specification do not need to have any prior knowledge of Computer Science or ICT. Students who are likely to do well in this subject will be logical thinkers, will enjoy mathematics and lateral thinking and will appreciate how the ability to manipulate computers is a skill that is needed by many industries, not just the obvious technology orientated ones.

A LEVEL QUALIFICATION

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| Year 2017/19 Advanced Level Award Examination Board: AQA 7517 | Paper 1: Fundamentals of programming Fundamentals of data structures Fundamentals of algorithms Theory of computation Fundamentals of functional programming Systematic approach to problem solving | Assessed: 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: 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 | Assessed: Written exam 2 hours 30 minutes 40% of A-level Compulsory short-answer and extended-answer questions. |
| | Non-exam assessment: Students will be expected to follow a systematic approach to solve or investigate a practical problem of their own choice. | Assessed: 75 marks 20% of A-level |

| AS LEVEL QUALIFICATION | | | | | | | | | | | | | |
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| Year 2017/18 Advanced Subsidiary Award Examination Board: AQA 7516 | <table border="0"> <tr> <td style="vertical-align: top;">Paper 1:</td> <td style="vertical-align: top;">Assessed:</td> </tr> <tr> <td>Fundamentals of programming</td> <td>On-screen exam</td> </tr> <tr> <td>Fundamentals of data structures</td> <td></td> </tr> <tr> <td>Systematic approach to problem solving</td> <td>1 hour 30 minutes</td> </tr> <tr> <td>Theory of computation</td> <td>50% of AS</td> </tr> <tr> <td></td> <td> Questions: Students answer a series of short questions and write/adapt/extend programs in an electronic answer document provided by AQA. </td> </tr> </table> | Paper 1: | Assessed: | Fundamentals of programming | On-screen exam | Fundamentals of data structures | | Systematic approach to problem solving | 1 hour 30 minutes | Theory of computation | 50% of AS | | Questions: Students answer a series of short questions and write/adapt/extend programs in an electronic answer document provided by AQA. |
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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.