winstanley college

**Computer Science**

| A level | Computer Science Course Content | Assessment |
|---|---|---|
| **Year 1** | You will learn the skills and techniques to design and develop algorithms and programs to solve problems. You will consider different aspects of computer systems including how different types of data are represented, the different types of programming languages and the internal and external components of computer systems and their roles. You will learn about logic gates and the mathematics related to this. You will learn about networks and communication and consider the consequences of the current uses of computers. | Internal mock exams will be held at the end of the year covering the material studied in Year 1. This will consist of a series of short questions and programming tasks including writing programs and adapting/extending programs using a pre-released skeleton program and a written exam paper consisting of short and extended-answer questions.<br>All external assessment for this course takes place at the end of Year 2. |
| **Year 2** | You will learn about a wider range of data structures and look in more depth at communications, networks and the Internet. You will learn about databases and big data.<br>In practical sessions you will learn to use SQL, DDL and how to use object-oriented and functional programming languages.<br>You will undertake a coursework project to develop your practical skills in the context of solving a realistic problem or carrying out an investigation. | 2½ hour on-screen exam where you will answer a series of short questions, write programs and adapt/extend programs using a pre-released skeleton program.<br>2½ hour written exam paper consisting of short and extended-answer questions.<br>You will undertake and document a practical project. This will be internally marked and externally moderated. |

**Where are they now?**

**Elisha Lloyd**

Elisha studied Computing, Chemistry and Mathematics at A level and Physics at AS level. She is currently studying Computer Science with a year in industry at the University of Reading.

After completing her undergraduate degree Elisha plans to gain some work experience in the IT industry, before moving into either the gaming industry or the space industry.

**Where are they now?**

**Niall Beard**

Niall studied A2 Computing, Mathematics and Philosophy and AS Further Maths and Politics and then went on to the University of Manchester to study Computer Science. He graduated in 2013 with an MEng in Computer Science.

After graduating he took a full-time position in a research group at the University developing software and infrastructure to facilitate Life Scientists. He had previously worked with this group as a paid intern during the summers throughout his degree. During his degree, he also set up a company with course-mates, worked on an IT Service Desk, and fixed students' internet connections in Halls of Residence.

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**Learning outside the classroom**

There are many drop-in Computer facilities throughout College (especially in the Library and along A-corridor) where you can practice your programming skills. A weekly student-led Code Club gives a space for you to work with other students to develop your programming skills and extend them to include other programming languages. Drop-in sessions are also available with your teacher and student mentors to help with both theory and practical. There are many on-line resources and video tutorials.

**Study Support**

When you enrol we'll make sure that you are receiving all the support you need, for example you may be entitled to extra time in your exams, you may benefit from working with a dyslexia tutor or you may simply need help with organising your time and many booklets!

**Academic Challenge**

If you are keen to continue with Computer Science at University you will receive help with choosing which university and which course is right for you. We will support your development of computational thinking skills, guide you to further reading and inspire you with activities and trips. We will also support your development of employability skills. Ex Winstanley students already studying this subject at university will visit and tell you the real story and visiting speakers will help you to understand more about working in the industry.

**From school pupil to Winstanley student**

Most students have achieved at least a grade 6 in Maths at GCSE and the majority also study Maths at A-level. The course does have a high mathematical content so you should enjoy the problem solving side of Maths and be prepared to work hard and persevere to develop your programming and problem-solving skills.

You should have experience of using a structured programming language (some examples are Python, Visual Basic, C#, Java). This could be gained either independently or by having achieved at least a grade 6 in Computer Science at GCSE. If your school does not offer Computer Science GCSE, websites such as www.codecademy.com can be a helpful place to start. It does not matter what language you learn, the important thing is to gain understanding of the underlying concepts and to learn to think algorithmically and logically.

Taster Days in July will enable you to see what a typical Computer Science lesson is like.