# A level Computer Science

## Why study Computer Science?

- It's ideal for students who enjoy puzzles and problem solving.
- The course helps you develop a broad understanding of the key principles of computer systems, including data, software and communications.
- It is a great foundation for anyone thinking of further study in a range of engineering, computing and ICT degrees and jobs.
- You will also be able to appreciate the ethical issues that arise with current and emerging computing technologies.

## Why study Computer Science at Solihull Sixth Form College?

- Over the two years of this highly practical course you will learn to use programming languages to design and write algorithms, which solve problems, leading on to a systems development project of your own choosing for real users.
- You can expect to gain an understanding of the operation of hardware under the control of software, and study existing solutions in areas such as communications, encryption and control systems.
- Computing is a practical subject and the lessons reflect this. A variety of teaching methods will be used to deliver the theory components, but the majority of the lessons are in computer labs. The College's virtual learning environment (Moodle) is used extensively to provide online resources.
- We hope to invite a number of guest speakers from the world of industry and higher education.

**Case Study**

Among the recent successful students to have taken this course is **Ethan Paterson-Barker**.

He came to the College from Lyndon School to study A levels and achieved outstanding results with A*, A and B grades in Mathematics, Computer Science, and Drama.

Alex has progressed to the University of Birmingham to study Computer Science and Software Engineering.

***"It's very welcoming to know that you can receive help not only from the teachers but also from your friends. The teachers were also always creating new resources to assist us and regularly gave us challenges to allow us to develop our grasp of topics and a deep understanding of the subject in general."***
***- student Ethan Paterson-Barker***

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## Course Outline

Computer Science is about computation, and in particular, about solving problems using computers. This means developing the skills needed to program computers and develop algorithms. Combining problem solving with knowledge of hardware, computer scientists can help solve real world problems in just about all areas of life.

Programming is an essential skill in Computer Science that underpins everything that students will do across the two years. An ability to program well will be a huge factor in a Computer Science students' success on Paper 2 and on the coursework. Those that choose to study Computer Science will need to be programming in their own time every single week of the course if they wish to succeed. If students enjoy programming and are willing to put in this time commitment, then Computer Science will be a great choice for them.

**Component 01** - Computer systems - this component will introduce you to the internal workings of the Central Processing Unit (CPU), the exchanging of data, and also looks at software development, data types and legal and ethical issues.
• The characteristics of contemporary processors, input, output and storage devices
• Software and software development
• Exchanging data (How data is exchanged between different systems)
• Data types, data structures and algorithms
• Legal, moral, cultural and ethical issues.
**Component 02 -** Content of Algorithms and programming – you will understand what is meant by computational thinking, and understand the benefits of applying computational thinking to solving a wide variety of problems.
• Elements of computational thinking
• Problem solving and programming
• Algorithms
**Component 03 -** Programming project - you will analyse, design, develop, test, evaluate and document a program written in a suitable programming language for real users.

## Assessment
This is a two-year, linear course; the exams will take place at the end of the course.
Examination – two exams, each of 2 hours 30 mins (80%) – components 1 and 2.
Coursework – system development project (20%) – component 3.
Examining Board – OCR.

## Special Entry Requirements
Grade 6 or better at GCSE Mathematics. If you have taken a Computer Science GCSE you must have achieved at least grade 4. In addition, standard A level entry requirements apply - see www.solihullsfc.ac.uk/courses/entry-requirements.

## Prohibited Options
Students may study this course in combination with Information Technology. However, before starting the course, students are strongly advised to check how this may affect their future application to Higher Education.

## What do our students go on to do?
This A level will give you a significant advantage if you decide to read Computer Science or a related degree at university. It is also a good base for several other degree areas such as Engineering or Digital Media, where the ability to program will be very useful. Some universities also require a good grade in a Mathematical A level in order to progress onto their Computer Science courses.

## Cost Implications
There are no major extra costs. Students can download and install the same programming environments we use on the course at no cost.

## Complementary Subjects or Enrichment Courses
Computer Science is a good support for a wide range of different Advanced subjects, but popular combinations include Maths and Sciences.

## Examination Results
This course started in September 2016. Results for the first three years are as follows:

| Year | Entry | A* | A | B | C | D | E | U | A-E% |
|---|---|---|---|---|---|---|---|---|---|
| 2018 | 64 | 1 | 2 | 10 | 15 | 14 | 13 | 9 | 85.9% |
| 2019 | 47 | 0 | 1 | 9 | 16 | 12 | 5 | 4 | 91.5% |
| 2020 | 47 | 1 | 3 | 9 | 15 | 16 | 3 | 0 | 100.0% |

## Contact

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