



COMPUTER SCIENCE

Why is the study of KS3 Computer Science important?

Computer Science is about solving problems. It is the principle of making technology work for you, enabling you to find efficient and effective solutions. Throughout your study, you will apply computational thinking and the cornerstones of computer science to a variety of problems. Modern-day societies require people to work in an innovative way and computer science provides you with the foundation to build your learning journey upon.

In Computer Science you will learn to further consolidate your skills in text-based programming languages, you will also get an opportunity to use block-based programming languages in a variety of different applications.

Computer Science theory is also explored, looking 'under the bonnet' at the computer system that you use on a day-to-day basis. You will develop an excellent understanding of network security, hardware, representing data in computer systems and fundamentally you will become a responsible e-citizen.

Within the computer science curriculum, we focus on digital literacy, to ensure that you have all the life skills that you require moving forward into the workplace or further education. Whilst computer science focuses on creating, ICT focuses on using. Throughout your study, you will learn valuable ICT skills, such as spreadsheets and document creation. Your computer science lessons will encourage you to think deeply and help you become a more effective and resilient problem solver that doesn't give up. Computer science provides a fantastic start to your understanding of the technological world in which we live, a great life skill that all universities and employers will appreciate.

What skills will the study of KS3 Computer Science teach you?

The skills you will learn through KS3 Computer Science include:

- Applying computational thinking techniques (abstraction, decomposition, pattern recognition, algorithms) in a range of scenarios to solve problems.
- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- How to act responsibly online to ensure that you and others stay safe online.
- Identify the key programming constructs (sequence, selection, iteration) required to solve a problem.
- Apply the key programming constructs (sequence, selection, iteration) to any programming language.
- Work independently and as part of a team to solve complex problems.
- Identify links between different elements of computer science
- Evaluate different methods of representing data and decide on the most suitable method for presentation/storage

What skills and knowledge will the study of KS4 Computer Science teach you?

- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way
- understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation
- analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs
- think creatively, innovatively, analytically, logically and critically
- understand the impacts of digital technology to the individual and to wider society
- apply mathematical skills relevant to Computer Science, such as binary conversions to number systems such as hexadecimal.



Curriculum intent

Our aim is for students to leave Outwood Academy Sheffield with a strong level of digital proficiency ready for the world of work. Our curriculum has a strong mixture of Computer Science, Digital Literacy and ICT. The curriculum aims to be diverse, covering multiple aspects of Computing, so that the love of Computing can be shared by all pupils. The curriculum will be broad, balanced and integrated, with the breadth and depth that will support students whichever pathway they choose at Key Stage 4 and beyond

2023/2024

This academic year is focusing on ensuring all students have had high quality lessons on important key topics such as internet safety, and the opportunity to learn programming languages such as Python.

2024/2025

Next academic year will build upon the strong level of progress pupils have made this academic year. It will further develop student's digital proficiency, through increasingly challenging software packages and more advanced use of high level programming languages.

Curriculum Progression Pathway

2023/2024

Half term	Year seven	Year eight	Year nine
1	Introduction to Computer Science, basic skills and internet safety.	Internet safety and introduction to Hardware and Software	Internet safety and cybersecurity
2	ICT and Digital Literacy project - Charlie and the chocolate factory	ICT and Digital Literacy project - Shoe business project	ICT and Digital Literacy project - Shoe business project
3	Game creation through Scratch	Introduction to Python through Edublocks	Introduction to Python through Edublocks
4	Data representation - Denary, Binary, Hexadecimal	Introduction to flowcharts and	Computational thinking
5	Computational thinking, and introduction to Python	Introduction to Python	Introduction to flowcharts and Flowol software
6	Introduction to Photoshop	Introduction to Photoshop	Introduction to Python



Curriculum Progression Pathway

2024/2025

Half term	Year seven	Year eight	Year nine
1	Introduction to Computer Science, basic skills and internet safety.	Internet safety and introduction to Hardware and Software	Internet safety and cybersecurity
2	ICT and Digital Literacy project - Charlie and the chocolate factory	ICT and Digital Literacy project - Shoe business project	ICT and Digital Literacy project - Topic TBC
3	Game creation through Scratch	Python 2 - Make your own adventure story	Python 2 - Make your own adventure story
4	Data representation - Denary, Binary, Hexadecimal	Introduction to flowcharts and Flowol software.	Computational thinking
5	Computational thinking, and introduction to Python	Game creation through Python	Game creation through Python
6	Introduction to Photoshop	Introduction to Adobe Animate	Introduction to Premiere Pro

Curriculum Progression Pathway - KS4

At KS4, we offer GCSE Computer Science. We also encourage all students to continue working towards their bronze, silver and gold awards from iDEA award (<https://idea.org.uk/>)

We deliver OCR Computer Science. The specification can be found [here](#).

Content Overview	Assessment Overview
<p>J277/01: Computer systems</p> <p>This component will assess:</p> <ul style="list-style-type: none">1.1 Systems architecture1.2 Memory and storage1.3 Computer networks, connections and protocols1.4 Network security1.5 Systems software1.6 Ethical, legal, cultural and environmental impacts of digital technology	<p>Written paper: 1 hour and 30 minutes 50% of total GCSE 80 marks</p> <p>This is a non-calculator paper.</p> <p>All questions are mandatory.</p> <p>This paper consists of multiple choice questions, short response questions and extended response questions.</p>
<p>J277/02: Computational thinking, algorithms and programming</p> <p>This component will assess:</p> <ul style="list-style-type: none">2.1 Algorithms2.2 Programming fundamentals2.3 Producing robust programs2.4 Boolean logic2.5 Programming languages and Integrated Development Environments	<p>Written paper: 1 hour and 30 minutes 50% of total GCSE 80 marks</p> <p>This is a non-calculator paper.</p> <p>This paper has two sections: Section A and Section B. Students must answer both sections.</p> <p>All questions are mandatory.</p> <p>In Section B, questions assessing students' ability to write or refine algorithms must be answered using either the OCR Exam Reference Language or the high-level programming language they are familiar with.</p>

