

Subject Information school website

Computing Overview

KS3 Computing Overview

“Computer science empowers students to create the world of tomorrow.” - Satya Nadella, CEO of Microsoft.

Computer programmes directly affect every aspect of our lives; Computer scientists theorise, design, develop and apply the software and hardware for the programmes most of us use every single day. As the digital world is rapidly evolving, the need for computer scientists continues to grow. At Noel-Baker Academy, we want to be part of educating the next generation of computing professionals and the Key Stage 3 curriculum is a three year programme to build the foundations based on the National Curriculum entitlement which is developing year on year at the Academy.

The curriculum is designed to give students the opportunity to build on their previous knowledge at each key stage, allowing further levels of progression as they move through the school from KS3 into KS4 in the future.

The curriculum will be taught by the Mathematics and Computer Science faculty and will comprise one lesson per week throughout the three years. Pupils will have access to a laptops for all of their lessons.

E-safety is at the core of what we do at Noel-Baker Academy. Regular lessons and Assemblies take place every year which cover historical and new emerging issues students could face online. We are passionate about keeping children safe on the internet and aim to support students within the online world through the curriculum.

In summary, we aim to:

- Deliver a curriculum that is rich in cultural capital and develop key skills such as app development and how to be effective citizens online.
- Give students opportunity to develop key employment skills necessary for the future including critical thinking, information & data analysis and evaluation plus IT literacy such as spreadsheets and databases and the fundamentals of online safety.
- Provide the foundations of knowledge for future study or the workplace.
- Provide regular assessments for students to demonstrate the full breadth and depth of their knowledge and skills.

Curriculum Implementation 2023-2024

Year 7 Units	Year 8 and 9 Units
1.Introduction to Computing	1.Cyber Security
2. E-safety	2.Introduction to Python
3. Introduction to Spreadsheets	3.Components of a Computer System Part 2
4. Components of a Computer system	4. Access Database
5. Developing a PowerPoint Interface	5.Networking
6. Website Development	6. Games Design

Units of study- Year 7

Introduction to Computing – This unit looks at using email, logging on to the machines and using Unifrog and Showbie our online learning platform- which is accessible for all students on iPad’s and mobile phones.

E-safety- This unit is aimed at focusing on grooming, online gambling and how to block and report issues online. Its aims to make our student aware and more resilient when seeing and accessing online material.

Introduction to Spreadsheets- This unit teaches our students how to use Excel proficiently using formulas, conditional formatting and sorting functions. Preparing students for possible study at KS4 and within future work places.

Components of a computer system- This unit looks at how the CPU works and how the computer is built, how it uses Binary code and how we build and develop machines. This unit is the basis for understanding Computer Science basics and prepares them for further study in Year 8.

Developing a PowerPoint Interface- This unit looks at interface design, how ubiquitous computing is used in the world around us. How we design for different disabilities and why professionalism and consistency in design is important. This unit prepares students for future KS4 study within iMedia/ BTEC courses.

Website Development - This unit teaches the foundations of HTML Coding using the program Dreamweaver an industry standard program. Its shows our student show to develop and publish to the web and create dynamic pages using CSS.

Units of study- Year 8/ 9

Cyber Security – This unit looks at internal and external threats, how DDos attacks take place and how company's/ students can spot phishing and other online scams. This unit support the computer science KS4 program of study.

Introduction to Python – This unit looks at programming using Python and the IDLE, it focuses on variables, strings, functions and iteration using the Turtle module to develop student's skills in programming and object orientation. This supports of KS4 curriculum and will be built on in year 3 of our developing curriculum.

Components of a computer system- This unit will look more closely at the inner workings of computational thinking, data representation looking at truth tables, Logic gates, binary and storage devices.

Access Databases – This unit looks at creating a single file database, with Query's, Forms and Reports. Students will be taught to sort and add data and develop a database that can be used in the real world.

Networking- This unit focuses on Topologies used within networking, how information is sent through a network and the use of protocols. Peer to Peer networks and how the internet works.

Games Design- for Games design we use the MIT website program Scratch, to develop students coding skills and create effect games that include scoring, sprites, variables, strings and produce interactive games that they can develop in the future and at home.

Curriculum Impact

Students within the school are given the opportunity learn the national curriculum and beyond to make them digital literate citizens. All students are given the same opportunities, and the curriculum is designed to bridge the gap in cultural capital that exists within technology, ensuring all students regardless of background are given access to the same knowledge and information to which other students may already be exposed. The students at the end of key stage 3 will be fully prepared for our proposed Key stage 4 offer at the end of 2025. The overall aim of the curriculum is for students to be able to successfully apply their knowledge learnt to different examples and contexts, a necessary skill applicable to Computer Science and ICT.