Meridian Trust

Curriculum Overview
Computing and ICT

Curriculum Overview

Key Stage 3

Curriculum Aims

Our curriculum gives all students the opportunity to build on both their knowledge and the skills required to develop their own computational thinking, foster their creativity using technology and learn to be responsible and safe whilst using computer systems.

We want to make sure students gain practical experience using different applications and hardware, whilst balancing their development in computer science, ICT, and digital literacy knowledge. We aim for the curriculum to prepare students for an ever-changing digital future, qualifications and careers in the computing and information and communication technology industry.

The curriculum intends for pupils to effectively demonstrate their learning through creative and enjoyable use of technology, application of computational thinking to improve on problem solving skills and being able to write programming code. The curriculum also aiming to give them a strong foundation on safety, responsibility, and security whilst online.

Key Curriculum Content

At Meridian Trust we build on the current National Curriculum for Key stage 3 computing to ensure students get a strong blend of E-safety, computing and digital literacy.

We work with the National Centre for Computing Education (NCCE) to enhance our offer of topics and projects to students. This well thought out pathway allows students to build on prior knowledge, use systems safety, improve communication within computing and the wider school community, and get the opportunity to work as an individual and in small groups.

The Curriculum journey for year 7 includes:

- E-Safety – The study of a cyberbullying, online safety, and the safer use of IT systems for school and at home.

- Programming – An introduction into the main programming techniques and concepts flowcharts and computational thinking.

- Modelling Data and Finance – Spreadsheet modelling and skills using formula, functions, and charts.

- Computer Systems– The hardware and software components of a computer and how they function. Data Encryption and Internet communication.

- Creative Media– Design and creation of graphics, animation and/or websites using relevant software packages.

The curriculum for year 8 includes:

- Online safety /Cyber security – Further understanding of how to use technology safely, respectfully, responsibly, and securely. Be aware of cyber security threats and the laws governing the use of computers.
- Python Programming – basic and advanced concepts in programming using a text-based programming language
- Media – Graphic (vector and bitmap) manipulation and/or animations. Develop and manipulate graphics and animations using suitable graphics and animation packages.
- Website development – Advanced concepts, embedding multimedia elements and forms. Careers research embedded within a topic theme.
- Multimedia/ Game development project – Undertake creative projects that involve selecting, using, and combining multiple applications. Use of problem solving, computer game design and project work concepts.

# How are students taught and assessed?

Students are taught in classrooms equipped with modern computers and

software that allows them to access and experience using Microsoft Office 365, freeware and other creative applications such as the Adobe suite. Students enhance their learning by communication via Microsoft Teams and other online resources for specific learning needs like Python programming.

> **Typical Curriculum Allocation:**
> **2 hours per fortnight**

Students are taught by subject experts during school time and encouraged to grow their independence and knowledge by using their time outside of school hours to further research and explore the changing world of computing.

Addressing one topic per half term during Key stage 3 allows teachers and learning to focus their attention on the key concepts and allows staff to feedback throughout lessons via formative assessments. There are knowledge checks and reviews of practical work produced by students, to ensure all students progress can be monitored and improved with feedback from teachers.
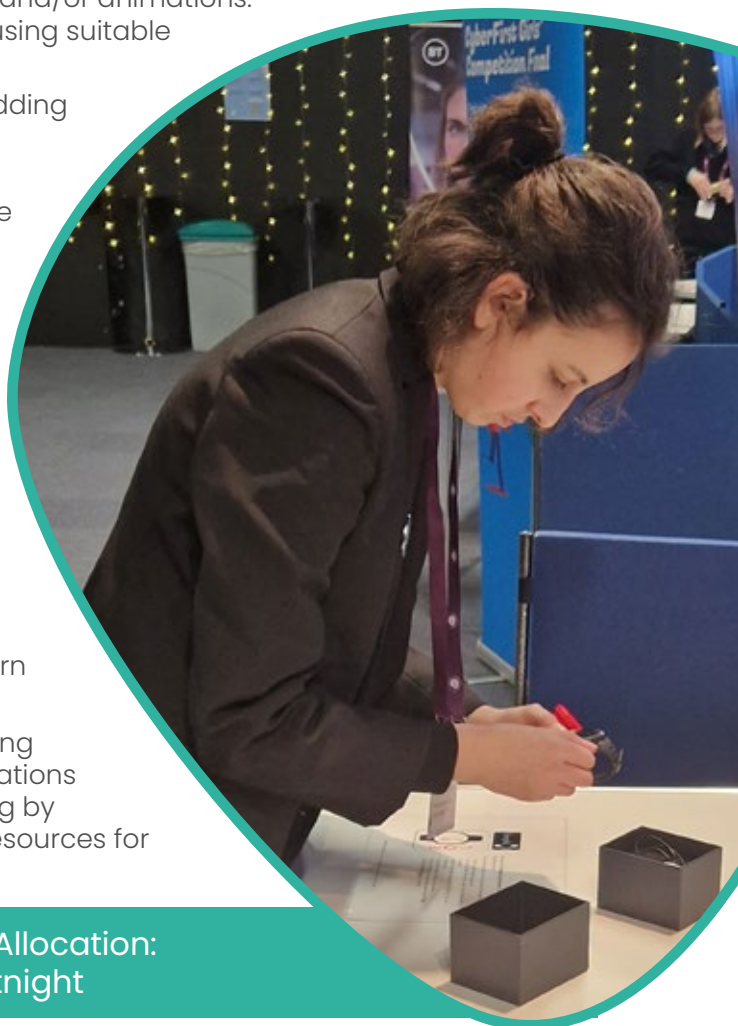
Curriculum Overview

Key Stage 4

Curriculum Aims

At Key stage 4 we aim to build on the foundations of computational thinking, problem solving and creative approaches to tasks, woven throughout the Key Stage 3 curriculum.

We aim to offer all students the opportunity to access the National curriculum, whilst also offering students the ability to further their knowledge by completing a qualification in Computer science or ICT.

Regardless of the route students take, we aim to ensure all students continue to develop their understanding of the dangers involved with technology so they may act responsibly and protect themselves in the future.

Key Curriculum Content

Students have the opportunity to learn more about elements of online safety continuously throughout their time at our schools.

Students taking GCSE computer science cover content that includes:

Computer systems - Introduces students to the central processing unit (CPU), computer memory and storage, data representation, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural, and environmental concerns associated with computer science.

Computational thinking, algorithms, and programming - Students apply knowledge and understanding gained in computer systems. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic, and translators.

Practical programming - Students are given the opportunity to undertake a programming task(s) during their course of study which allows them to develop their skills to design, write, test, and refine programs using a high-level programming language.

OCR COMPUTER SCIENCE GCSE
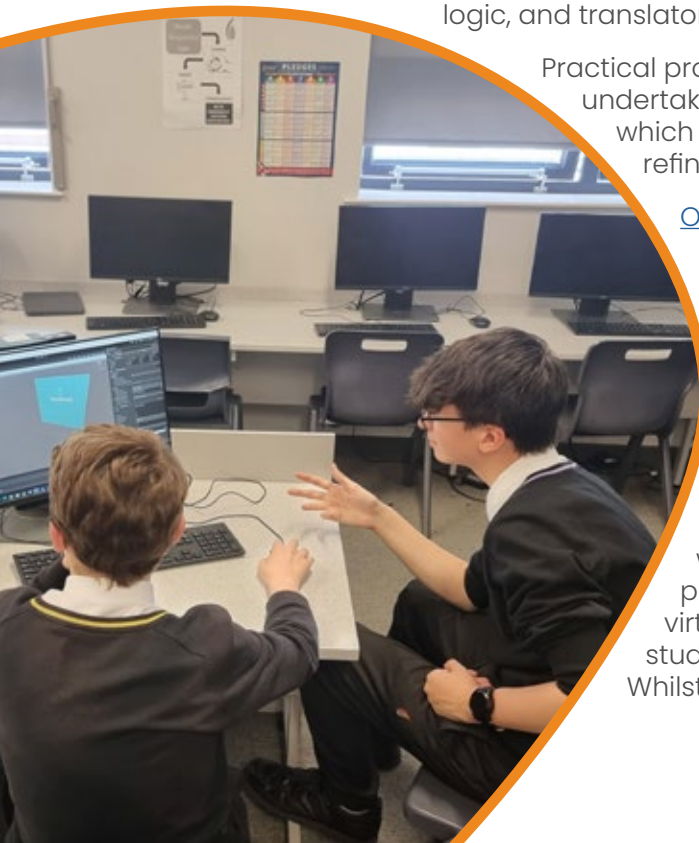
Students taking BTEC IT qualifications cover:

The development of key skills that provide aptitude in digital information technology, such as project planning, designing, and creating user interfaces, creating dashboards to present and interpret data.

Students will cover the process that underpins effective ways of working in digital information technology, such as project planning, the iterative design process, cyber security, virtual teams, legal and ethical codes of conduct. Also, students address personal management and communication. Whilst learning about the knowledge that underpins effective

use of skills, **process, and attitudes in the computing sector.** For example, how different user interfaces meet user needs, how organisations collect and use data to make decisions, virtual workplaces, cyber security, and legal and ethical issues.

BTEC LEVEL 2 INFORMATION TECHNOLOGY

Students taking an iMedia course will cover multiple units of work including for all students:

Pre-Production knowledge: Which enables learners to understand pre-production skills used in the creative and digital media sector. It develops their understanding of a client brief, time frames, deadlines and preparation techniques that form part of the planning and creation process. Including mood boards, Health and Safety and storyboards.

Production: Will improve the understanding of basics digital graphics editing for the creative and digital media sector. Students will learn where and why digital graphics are used and what techniques are involved in their creation. It will develop learners' understanding of the client brief, time frames, deadlines, and preparation techniques as part of the planning and creation process.

There are then optional units that schools will select to complete the programme of study.

CAMBRIDGE NATIONALS CREATIVE IMEDIA LEVEL 1/LEVEL 2 – J834

Typical Curriculum Allocation: 4-5 hours per fortnight

How are students taught and assessed?

Students are taught using up to date software and hardware facilities, that allow them access to teaching materials both in the classroom and virtually.

At GCSE computer science (OCR) students are assessed by two formal GCSE exam papers and a practical project they must complete.

Unit 1 – Computer Systems. 1.5 hour exam worth 50% of final grade.

Unit 2 - Computational thinking, algorithms and programming. 1.5 hours exam worth 50% of final grade.

Practical Programming Project – To be completed in school and skills assessed in Unit 2 exam.

BTEC – Digital Information Technology. Students are assessed via 3 units of work.

Unit 1 - Exploring User Interface Design Principles and Project Planning Techniques. Internally assessed.

Unit 2 - Collecting, Presenting and Interpreting Data. Internally assessed.

Unit 3 - Effective Digital Working Practices. 1.5 Hour written exam.

The overall grade is calculated by adding the points scored in each unit together, which converts into a Grade ranging from Pass Level 1 up to Distinction* Level 2

OCR Creative iMedia Cambridge Nationals.

R081: Pre-production skills – Written exam 1hr 15 mins – 25% of qualification

R082: Creating digital graphics – Centre Assessed – 25% of qualification.

Then two more optional units – centre assessed – worth 25% each.

Curriculum Overview

Enrichment

Beyond the classroom

Using our Trust IT facilities, students have access to applications both inside and out of the classroom. This 24-hour access allows students to develop their independent learning and access facilities even when unable to attend lessons.

Each school offers different offers to their students in terms of lunch time and session 6 clubs and activities. Most schools offer students opportunities to develop their Minecraft creative and programming skills.

Schools also offer programmes to encourage females into computer science, robot building and E-Sports.

Schools in the Trust also offer educational visits to help extended the boundaries of learning for students. These include Bletchley Park and the Cambridge computing museum.

Cross-Trust Activities

There are two main opportunities each year for students to build friendships with students in other schools. We offer an annual E-Sport competition between schools. Young people are set up in teams to plan and compete in both group and individual E-Sport events across the space of a day. Students develop communication, team work and leadership skills.

Students are also invited to compete in a local games design competition run by an external charity FXP. Small groups of students work together towards a challenge set by FXP each year. They must design, plan, create resources and narratives for a new computer game. Students can then develop their own 2D or 3D game and test them. Students then get the opportunity to present their game to judges at FXP. This programme is done in school and entries come from across the trust.

FXP also run a weekend each summer where students travel down to a local technical college to work hand in hand with game industry professionals. They are set a gaming task that teams then complete and share with others.