

Key Stage 3 Computing Curriculum

The Department of Computing at Richard Rose Morton Academy goes beyond the national curriculum to equip learners with theoretical knowledge and practical skills to become competent digital citizens.

National Curriculum:

1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.
2. Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.
3. Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.
4. Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal].
5. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.
6. Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.
7. Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.
8. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.
9. Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns.

National curriculum links are shown with markers next to each unit name.

Year 7:

7.1 Digital Literacy and Online Safety (NC: 8,9)

- Learners explore safe online practices and understand how to protect personal information.
- Learners will develop skills in using digital tools and understanding online content effectively.

7.2 Computational Thinking (NC: 1,3,7)

- Learners will learn about computational thinking techniques used to solve real-life problems.

7.3 Introduction to Python Programming (NC: 2,3,6)

- Learners are introduced to basic Python programming concepts that build on the computational thinking principles.

7.4 Web Development (NC: 7,8)

- Learners use HTML + CCS to create simple webpages about their chosen topic.

7.5 Digital Skills (NC: 1,7,9)

- Learners practice key skills that will enable them to become competent digital citizens.

Year 8:**8.1 Cybersecurity (NC: 7,8,9)**

- Learners investigate the principles of cybersecurity and how to safeguard against common cyber threats.

8.2 Number Systems and Logic (NC: 4,5,6)

- Learners discover binary number system and logic systems to understand how hardware and software works.

8.3 Python Programming (NC: 2,3,6)

- Learners build on their programming skills to write programs using selection and iteration.

8.4 Computer Systems (NC: 5,6,7)

- Learners explore how data is stored on hardware and how data is transmitted on networks to create the Internet.

8.5 Data Science (NC: 1,7,8)

- Learners explore the world of data collection and visualisation to gain insights and support decision-making.

Year 9:

9.1 Media Production (NC: 7,8,9)

- Learners will create digital graphics using Adobe Photoshop with specific target audiences in mind.

9.2 Python Programming (NC: 2,3,6)

- Learners dive deeper into programming by utilising arrays in their programs.

9.3 Physical Computing (NC: 2,3,4,5,6)

- Learners get a hands-on experience with physical computing - controlling hardware using self-made software.

9.4 Digital World (NC: 7,8,9)

- Learners examine the impact of digital technologies on society and future trends.