Why Teach Computer Science?

We believe that Computer Science is a vital subject for pupils to learn within the modern world, where computing and technology are embedded in everyday life. By learning Computer Science learners will study: -

· How computers work

· How to use key programs to present and share work

· How they are programmed

· How to recognise online dangers and stay safe within the online world

· Understand how digital technology is vital for modern careers

· Computational thinking and problem-solving skills they can use in many areas

· Understand the impact ethical, morally, socially and environmentally and the laws which are in place to protect intellectual property and society

Substantive Big Ideas:

Curriculum maps detail the sequencing of substantive knowledge from Computer Science to enable pupils to build schemata of important concepts over time through 4 'big ideas".

- Computer Systems and Networks
- Programming
- Data Representation
- Creative Skills

Disciplinary Big ideas

These core aspects of disciplinary knowledge are used to strengthen and develop substantive knowledge and underpin our common teaching approaches.

- Exploration & Analysis
- Planning & Time Management
- Presentation Skills & Literacy
- Decision Making & Creative Application
- Research Skills & Why Teach Computer Science: Numeracy
- Critical Thinking
- E - Safety
- ICT Literacy

Learning for Life

Employability Skills
Learning to program builds characteristics such as collaboration, communication, creativity, critical thinking and resilience. Additionally, this subject develops numeracy and literacy, problem solving, and the ability to analyse and evaluate.

Linking the curriculum to careers
Careers in computing, engineering, IT, data management and security.

Examples of qualification pathways
At KS4 we offer GSCE Computer Science and at KS5 we offer A level Computer Science. The Computer Science GCSE progresses naturally to the Computer Science A level or Professional qualifications such as CCNA, which in turn can lead to further study at degree level.

Northampton International Academy
Computer Science Curriculum Map – Topics by Term

East Midlands Academy Trust

	Computer Systems & Networks	Programming		Creative Skills	Data Representation

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1	Collaborating online respectfully	Computer Systems	Representation – Going Audio	System Architecture.	Programming Language and IDE's
Autumn 2	Collaborating online respectfully	Representations – from clay to silicon	Representation - Going Audio	Memory & Storage	Networks & Network Security
Spring 1	Programming essentials SCRATCH	Vector Graphics	Representation - Going Audio 1	Boolean Logic	Producing robust programs
Spring 2	Programming essentials SCRATCH	Mobile app development	Python with sequence	Systems Software	Ethical, Legal, Cultural and Environmental
Summer 1	Modelling data	Developing the web	Python with sequence	Algorithms	Revision
Summer 2	Modelling data	**Python Programming**	Python with sequence	Programming fundamentals	**N/A**

Computer Systems & Networks	Programming	Creative Skills	Data Representation

	Year 12	Year 13
Autumn 1	Components of a CPU / Computational Thinking	System Software
		Programming project
Autumn 2	Data Types	Exchanging Data
	Software Development	Programming project
Spring 1	Data Structure	Networks and web technologies
	Programming Techniques	Programming project
Spring 2	Data and Boolean Algebra	Legal, Moral, Ethical and Cultural Issues
	Algorithms	Revision
Summer 1	Boolean Algebra.	Revision
	Mini Programming project	
Summer 2	Revision	**Exams**
	Programming project	