National Centre for Computing Education

GCSE specifications to Computer Science Accelerator course map

Introduction

This document demonstrates how the courses for the Computer Science Accelerator maps to the GCSE computer science specifications for first delivery in September 2020. **This document was updated in September 2025**.

How to access CPD?

he National Centre for Computing Education offers CPD in two ways:

1. **Online CPD**: you can access our online CPD free of charge via our website and fit it around your schedule. Visit the Teach Computing website to find our available online courses.
2. **York-based residentials:** these take place throughout the year at the National STEM Learning Centre, York. Residentials are free for teachers working in state-funded schools in England. Visit the Teach Computing website to find available residentials.

Awarding body specifications

The course map is based upon the following awarding body specifications:

- OCR (J277)
- Pearson / Edexcel
- AQA (8525)

OCR (J277)

A copy of the OCR J277 GCSE Computer Science specification can be found on the OCR website.

Specification:	Online courses:
1.1 Systems architecture	• An introduction to computer systems, networking and security in GCSE computer science • Understanding Computer Systems • Design and Prototype Embedded Computer Systems • How Computers Work: Demystifying Computation
1.2 Memory and storage	• An introduction to computer systems, networking and security in GCSE computer science • Foundation knowledge of computer science for KS3 and GCSE • Data Representation in Computing: Bring Data to Life • Maths in computer science • Understanding Maths and Logic in Computer Science
1.3 Computer networks, connections and protocols	• Foundation knowledge of computer science for KS3 and GCSE • Fundamentals of computer networks
1.4 Network security	• Foundation knowledge of computer science for KS3 and GCSE • Fundamentals of computer networks • Introduction to Cybersecurity for Teachers • Introduction to Encryption and Cryptography
1.5 Systems software	• Foundation knowledge of computer science for KS3 and GCSE • How Computers Work: Demystifying Computation
1.6 Ethical, legal, cultural and environmental impacts of digital technology	• Impact of Technology: How To Lead Classroom Discussions • AI and Ethics in GCSE computer science
2.1 Algorithms	• Search and sort algorithms • An Introduction to algorithms, programming and data in computer science
2.2 Programming fundamentals	• Programming 101: An Introduction to Python for Educators

	• Python programming constructs: sequencing, selection and iteration
2.3 Producing robust programs	• Python programming constructs: sequencing, selection and iteration • Programming 102: Think like a Computer Scientist • Programming 103: Saving and Structuring Data
2.4 Boolean logic	• An Introduction to algorithms, programming and data in computer science • Programming 102: Think like a Computer Scientist
2.5 Programming languages and Integrated Development Environments	• Programming 102: Think like a Computer Scientist • Programming 103: Saving and Structuring Data • Programming with GUIs

Pearson / Edexcel (J277)

A copy of the Pearson / Edexcel GCSE Computer Science specification can be found on the Pearson website.

Specification:	Online courses:
Topic 1: Computational thinking	• Python programming constructs: sequencing, selection and iteration • Programming 101: An Introduction to Python for Educators • Programming 102: Think like a Computer Scientist • An Introduction to algorithms, programming and data in computer science • Search and sort algorithms
Topic 2: Data	• Data Representation in Computing: Bring Data to Life • An Introduction to algorithms, programming and data in computer science • Foundation knowledge of computer science for KS3 and GCSE • How Computers Work: Demystifying Computation • Maths in computer science • Understanding Maths and Logic in Computer Science
Topic 3: Computers	• An introduction to computer systems, networking and security in GCSE computer science • Design and Prototype Embedded Computer Systems • Foundation knowledge of computer science for KS3 and GCSE • Understanding Computer Systems
Topic 4: Networks	• An Introduction to Computer Networking for Teachers • An introduction to computer systems, networking and security in GCSE computer science • Foundation knowledge of computer science for KS3 and GCSE • Fundamentals of computer networks • Introduction to Cybersecurity for Teachers
Topic 5: Issues and impact	• Impact of Technology: How To Lead Classroom Discussions • AI and Ethics in GCSE computer science
6.1 Develop code	• Block-based programming for KS3 computing • An Introduction to algorithms, programming and data in computer science

	• Programming 101: An Introduction to Python for Educators
6.2 Constructs	• Block-based programming for KS3 computing • An Introduction to algorithms, programming and data in computer science • Programming 101: An Introduction to Python for Educators
6.3 Data types and structures	• An Introduction to algorithms, programming and data in computer science • Programming 101: An Introduction to Python for Educators • Programming 102: Think like a Computer Scientist • Programming 103: Saving and Structuring Data • Python programming advanced subject knowledge, implementation and testing
6.4 Input/output	• An Introduction to algorithms, programming and data in computer science • Programming 101: An Introduction to Python for Educators • Programming 102: Think like a Computer Scientist
6.5 Operators	• Programming 101: An Introduction to Python for Educators • Programming 102: Think like a Computer Scientist • Python programming advanced subject knowledge, implementation and testing
6.6 Subprograms	• Object-oriented Programming in Python: Create Your Own Adventure Game • Programming 102: Think like a Computer Scientist • Programming 103: Saving and Structuring Data • Programming with GUIs • Python programming advanced subject knowledge, implementation and testing

AQA (8525)

A copy of the AQA 9-1 GCSE Computer Science specification can be found on the AQA website.

Specification:	Online courses:
Fundamentals of algorithms	• An Introduction to algorithms, programming and data in computer science • Programming 101: An Introduction to Python for Educators • Search and sort algorithms
Programming	• An Introduction to algorithms, programming and data in computer science • Block-based programming for KS3 computing • Python programming constructs: sequencing, selection and iteration • Programming 101: An Introduction to Python for Educators • Programming 102: Think like a Computer Scientist • Programming 103: Saving and Structuring Data • Object-oriented Programming in Python: Create Your Own Adventure Game • Programming with GUIs
Fundamentals of data representation	• Data Representation in Computing: Bring Data to Life • Foundation knowledge of computer science for KS3 and GCSE • Maths in computer science • Understanding Maths and Logic in Computer Science
Computer systems	• An introduction to computer systems, networking and security in GCSE computer science • Design and Prototype Embedded Computer Systems • Foundation knowledge of computer science for KS3 and GCSE • How Computers Work: Demystifying Computation • Understanding Computer Systems
Fundamentals of computer networks	• An Introduction to Computer Networking for Teachers • An introduction to computer systems, networking and security in GCSE computer science • Fundamentals of computer networks
Cyber security	• An Introduction to Computer Networking for Teachers • An introduction to computer systems, networking and security in GCSE computer science

	• Introduction to Cybersecurity for Teachers • Introduction to Encryption and Cryptography
Relational databases and structured query language (SQL)	• Introduction to databases and SQL
Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy	• Impact of Technology: How To Lead Classroom Discussions • AI and Ethics in GCSE computer science