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 October 2022.**

OCR (J277)

1. Computer systems (J277/01)	**Online**	**Face-to-face/Remote**
1.1 – Systems architecture	How computers work: demystifying computation Understanding computer systems Design and prototype embedded computer systems	An introduction to computer systems, networking and security Computer systems: input, output and storage Computer processors
1.2 – Memory and storage	Representing data with images and sound: bringing data to life Understanding computer systems	An introduction to computer systems, networking and security An introduction to algorithms, programming and

	How computers work: demystifying computation Introduction to web development Understanding maths and logic in computer science	data Computer systems: input, output and storage
1.3 – Computer networks, connections and protocols	An introduction to computer networking for teachers Introduction to encryption and cryptography	An introduction to computer systems, networking and security Fundamentals of computer networks
1.4 – Network security	Introduction to encryption and cryptography Introduction to cybersecurity for teachers Impact of technology: how to lead classroom discussions	An introduction to computer systems, networking and security The internet and cyber security
1.5 – Systems software	Understanding computer systems	An introduction to computer systems, networking and security
1.6 – Ethical, legal, cultural and environmental impacts of digital technology	Impact of technology: how to lead classroom discussions Introduction to cybersecurity for teachers	Higher attainment in GCSE computer science — meeting the challenge of exams

2. Computational thinking, algorithms and programming (J277/02)	Online	Face-to-face/Remote
2.1 – Algorithms	Design and prototype embedded computer systems Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data Programming with GUIs Object-oriented programming in Python: create your own adventure game	An introduction to algorithms, programming and data Representing algorithms using flowcharts and pseudocode Search and sort algorithms Maths in computer science
2.2 – Programming fundamentals	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 Understanding maths and logic in computer science	An introduction to algorithms, programming and data Python programming constructs: sequencing, selection & iteration for OCR Specification Python programming: working with data Higher attainment in GCSE computer science – meeting the challenge of exams

	Understanding computer systems Introduction to databases and SQL	
2.3 – Producing robust programs	Introduction to cybersecurity for teachers Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data Design and prototype embedded computer systems	Python programming constructs: sequencing, selection & iteration for OCR Specification Python programming: working with data Python programming: analysis, design and evaluation Python programming: advanced subject knowledge, implementation and testing Higher attainment in GCSE computer science — meeting the challenge of exams
2.4 – Boolean logic	How computers work: demystifying computation Understanding maths and logic in computer science	An introduction to algorithms, programming and data Maths in computer science
2.5 – Programming languages and Integrated Development Environments	Programming 101: An introduction to Python for educators How computers work: demystifying computation	An introduction to algorithms, programming and data Python programming constructs: sequencing, selection & iteration for OCR Specification Python programming: working with data

		Python programming: analysis, design and evaluation Python programming: advanced subject knowledge, implementation and testing

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Pearson Edexcel (1CP2)

Principles of Computer Science (1CP2/01)	Online	Face-to-face/Remote
1 – Computational thinking	Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data Design and prototype embedded computer systems Object-oriented programming in Python: create your own adventure game Understanding maths and logic in computer science How computers work: demystifying computation	An introduction to algorithms, programming and data Representing algorithms using flowcharts and pseudocode Search and sort algorithms Higher attainment in GCSE computer science — meeting the challenge of exams Maths in computer science
2 – Data	Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist How computers work: demystifying computation Understanding maths and logic in computer science	An introduction to algorithms, programming and data Computer systems: input, output and storage Maths in computer science

	Representing data with images and sound: bringing data to life Design and prototype embedded computer systems	
3 – Computers	How computers work: demystifying computation Understanding computer systems Design and prototype embedded computer systems Introduction to cybersecurity for teachers	An introduction to computer systems, networking and security Computer systems: input, output and storage Computer processors
4 – Networks	An introduction to computer networking for teachers Introduction to cybersecurity for teachers Impact of technology: how to lead classroom discussions	An introduction to computer systems, networking and security Fundamentals of computer networks
5 – Issues and impact	Introduction to cybersecurity for teachers Impact of technology: how to lead classroom discussions	The internet and cyber security Higher attainment in GCSE computer science — meeting the challenge of exams Supporting GCSE computer science students with grades 1-3

Application of Computational Thinking (1CP2/02)	Online	Face-to-face/Remote
6.1 – Develop code	Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data Design and prototype embedded computer systems Object-oriented programming in Python: create your own adventure game	An introduction to algorithms, programming and data Python programming constructs: sequencing, selection & iteration for Pearson Python programming: working with data Python programming: analysis, design and evaluation Python programming: advanced subject knowledge, implementation and testing
6.2 – Constructs	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	An introduction to algorithms, programming and data Python programming constructs: sequencing, selection & iteration for Pearson Python programming: working with data
6.3 – Data types and	Programming 101: An introduction to Python for	An introduction to algorithms, programming and

structures	educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data Object-oriented programming in Python: create your own adventure game	data Python programming: working with data Python programming: advanced subject knowledge, implementation and testing
6.4 – Input/output	Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Programming 103: Saving and structuring data	Python programming constructs: sequencing, selection & iteration for Pearson
6.5 – Operators	Understanding maths and logic in computer science Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist	Python programming constructs: sequencing, selection & iteration for Pearson Python programming: working with data Maths in computer science
6.6 – Subprograms	Programming 102: Think like a computer scientist Programming 103: Saving and structuring data	Python programming: working with data Python programming: advanced subject knowledge, implementation and testing

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AQA (8525)

Paper 1: Computational thinking and programming skills	Online	Face-to-face/Remote
3.1 – Fundamentals of algorithms	Programming 101: An introduction to Python for educators Programming 102: Think like a computer scientist Object-oriented programming in Python: create your own adventure game	An introduction to algorithms, programming and data Representing algorithms using flowcharts and pseudocode Search and sort algorithms Higher attainment in GCSE computer science — meeting the challenge of exams Maths in computer science
3.2 – Programming	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 Design and prototype embedded computer systems	An introduction to algorithms, programming and data Python programming constructs: sequencing, selection & iteration for AQA Python programming: working with data Python programming: analysis, design and evaluation Python programming: advanced subject

	Understanding maths and logic in computer science Networking with Python: socket programming for communication	knowledge, implementation and testing

Paper 2: Computing concepts	Online	Face-to-face/Remote
3.3 – Fundamentals of data representation	Representing data with images and sound: bringing data to life Understanding maths and logic in computer science How computers work: demystifying computation	An introduction to algorithms, programming and data Computer systems: input, output and storage Maths in computer science
3.4 – Computer systems	Understanding computer systems Understanding maths and logic in computer science How computers work: demystifying computation	An introduction to computer systems, networking and security Computer systems: input, output and storage Computer processors
3.5 – Fundamentals of computer networks	An introduction to computer networking for teachers Impact of technology: how to lead classroom	An introduction to computer systems, networking and security Fundamentals of computer networks

	discussions Introduction to encryption and cryptography Introduction to cybersecurity for teachers	The internet and cyber security
3.6 – Cyber security	Introduction to cybersecurity for teachers Impact of technology: how to lead classroom discussions	An introduction to computer systems, networking and security The internet and cyber security
3.7 – Relational databases and structured query language (SQL)	Introduction to databases and SQL	
3.8 – Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy	Introduction to cybersecurity for teachers Impact of technology: how to lead classroom discussions	Higher attainment in GCSE computer science — meeting the challenge of exams Supporting GCSE computer science students with grades 1-3