2023-
2024

Computer Science curriculum map

Brownhills Ormiston Academy- Computer Science Curriculum Map

Year 7 Computer Science:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
E-Safety and Microsoft Skills: An introduction to Brownhill's ICT network, staying safe online, sharing work, communicating electronically, the various Microsoft skills needed to complete everyday computing tasks.	**Binary Representation:** An introduction to binary and the way in which computers work. Conversion of binary and decimal numbers. Binary addition and hexadecimal calculations.	**Flow Charts using Flowol:** A unit to allow creation of flowcharts to help represent different processes and the specific sequences involved. Once complete they can turn these into algorithms using logical thinking.	**Python Turtle:** Pupils will create a series of programs such as creating different shapes, objects utilising Python Turtle to build their application of knowledge and programming skills.	**Python Programming:** This unit builds upon Python further with more opportunities to embed programming as a fundamental skill in Computer Science through the creation of building calculators and prediction programs.	**Computational Thinking:** A unit to allow pupils to further embed deeper thinking, they will be provided with several real-life problems in society; using computational thinking methods they will then apply these to solve the problem just as a computer would.

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Year 8 Computer Science:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Systems Architecture: An introduction to how a computer is made, the production of it and the environmental impact of it. Pupils will also explore the main components of a computer and look at the FDE (Fetch decode execute) cycle in detail.	**Python Programming:** This unit builds upon the foundations of Python programming and focuses on programming efficiently. Programs created will vary in size and technique and will give pupils an opportunity to program in different ways.	**Databases:** Pupils will design and build their own database using Microsoft Access. The various databases they will build include a school, hospital, police station and supermarket database, linking real world applications in the subject.	**Security and Attack:** Hacking, the laws and the dangers of cyber-attacks are all explored in this unit. Pupils will discover the reasons why cybercriminals commit crimes and the implications of breaching the Computer Misuse Act. They will explore malware and how it is often spread.	**Python Project:** Pupils will be given an opportunity to create a Python text-based adventure game using the skills and knowledge they have acquired so far in programming. This adventure game will consist of multiple levels and will vary and difficulty and levels.	**Python Project:** Continuation and completion of Python text-based adventure game.

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Year 9 Computer Science:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Algorithms/Data Representation: Algorithms are sequenced sets of instructions; this unit focuses on the real-world applications and implications of decision making. Data representation is explored further and binary, hexadecimal is revisited.	**Computer Animation:** Pupils will be given an opportunity to explore animation and create their own animation clip using Blender. The unit focuses on how computers are used to generate movies and the techniques behind these processes.	**Advanced Python:** Pupils will be given a series of Python based programs to improve and make efficiency. Using several programming methods and techniques efficiency and clean coding practices are explored in great depth.	**Computer Networks:** Networks are groups of interconnected computers. Pupils will create networks and establish how communication takes place between devices, people and countries. Network devices, protocols and layers in a network are also explored.	**Advanced Spreadsheets:** This unit focuses on the creation of spreadsheets using Microsoft Excel. Several real-world examples are used to demonstrate the importance of spreadsheets, data handling and management. Pupils will also embed macros and formulas within these spreadsheets to aid automation.	**Computational Thinking:** A unit to allow pupils to pick a current and relevant real-world topic to solve as a problem using the computational methods of thinking (decomposition, abstraction and pattern recognition) This unit also covers an investigation of motorways and traffic jams, workforce skills and robots and how computers are currently used to deal with these real-world occurrences.

Brownhills Ormiston Academy- Computer Science Curriculum Map

Year 10 WJEC Level 1/2 Tech Award ICT:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
• Skills Audit and Recall • Introduction to qualification • Functionality of different hardware devices	• Functionality of different software • Databases skills and application in contexts	• Use of ICT services • Images skills and applications in contexts	• Images skills and applications in contexts • Spreadsheets skills and applications in contexts	• Spreadsheet skills and application in contexts • How data and information is used and transferred for cyber security	• How data and information is used and transferred for cyber security. • Development of ICT coursework skills

Year 11 WJEC Level 1/2 Tech Award ICT:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Coursework completion	Coursework completion	Unit 1- 5539U1 Exam • Project life cycle • Data and information	Unit 1- 5539U1 Exam • Cyber security • Presenting data	Revision	Public examinations

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Year 10 OCR Computer Science J277:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
J277/01: Computer systems • Systems architecture	J277/01: Computer systems • Memory and storage	J277/01: Computer systems • Computer networks	J277/01: Computer systems • Networks security	J277/01: Computer systems • Systems software	J277/01: Computer systems • Ethical, legal, cultural and environmental impacts of digital technology

Year 11 OCR Computer Science J277:

Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
J277/02: Computational thinking, algorithms and Programming • Algorithms	J277/02: Computational thinking, algorithms and Programming • Programming fundamentals	J277/02: Computational thinking, algorithms and Programming • Producing robust programs	J277/02: Computational thinking, algorithms and programming • Boolean logic	J277/02: Computational thinking, algorithms and Programming • Programming languages	J277/02: Computational thinking, algorithms and Programming • Programming languages