Computer Science Subject Intent

The Computer Science department at Dixon's Broadgreen Academy empowered students to become, enthusiastic, skilled, innovative and considerate users of technology, with a deep-rooted ethical and moral compass.

Seven Year Plan

Year 7			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**Computer systems**	**CPU Fetch-execute cycle**	**Data and data representation**
Skills	**Hardware /Software** **Operating systems** **ROM RAM storage types** **Networks WAN/LAN/Internet** **Routers/Switches / packets**	**FED** **Compiler** **Interpreter**	**Binary** **Conversion** **Calculations** **Images -Depth and resolution** **Sound -Analogue to digital** **(HEX ASCII – extension only)**
Progression	**Due to KS2 students rarely having acquired knowledge to the expected level and of being mixed exposure/experience we begin with the basics**	**Now pupils know the hardware and technology systems. We learn how the internal system works.**	**From cycle 2. We learn the language that computers use to communicate and how to convert data/information**
Link to GCSE	**J277 Paper 1 Computer systems** **1.2 Memory and storage,** **1.3 Computer networks, connections and protocols**	**J277 Paper 1 Computer systems** **1.1 Systems architecture,**	**J277 Paper 2 Computational thinking / Algorithms / programming** **1.2 Memory and storage**
Year 8			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**Algorithms, Flowcharts and Pseudocode**	**Searching and sorting and programming**	**Boolean logic and programming**
Skills	**Abstraction** **Decomposition** **Pseudocode format** **Flowchart symbols** **More than one way to solve a problem**	**Linear searches** **Binary searches** **Introduction to Python**	**Logic gates** **And Or Not** **Truth tables** **Mini project for HTML**
Progression	**Introduction of new skills, preparing to be programmers. How we breakdown ideas, ready for the programmers**	**Organising and selecting information** **Developing programming skills Scratch/Python. Scratch progression from KS2**	**Computer systems 7.1** **CPU and data 7.2** **Binary from 7.3**

Link to GCSE	**J277 Paper 2 Computational thinking / Algorithms / programming** **2.1 Algorithms**	**J277 Paper 2 Computational thinking / Algorithms / programming** **2.1 Searching and sorting** **2.2 Programming fundamentals - Python**	**J277 Paper 1 Computer systems** **2.4 Boolean logic** **2.2 Programming fundamentals - Python**
Year 9 – Core carousel			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**Digital literacy/life skills**	**Digital literacy/life skills**	**Digital literacy/life skills**
Skills	**Copyright** **Plagiarism** **The Laws** **Health & Safety** **CEOP** **Digital Footprint**	**Copyright** **Plagiarism** **The Laws** **Health & Safety** **CEOP** **Digital Footprint**	**Copyright** **Plagiarism** **The Laws** **Health & Safety** **CEOP** **Digital Footprint**
Progression	**Developing IT and software skills** **Developing skills introduced for mini project from 8.3**	**Developing IT and software skills** **Developing skills introduced for mini project from 8.3**	**Developing IT and software skills.** **Developing skills introduced for mini project from 8.3**
Link to GCSE / A-Level	**Skills for school / college / university / workplace**	**Skills for school / college / university / workplace**	**Skills for school / college / university / workplace**
Yr 9 GCSE			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**1.2 Memory and Storage** **2.4 Boolean Logic**	**2.1 Algorithms** **2.2 Programming Fundamentals** **2.5 Programming languages and Integrated Development Environments**	**2.1 Algorithms** **2.2 Programming Fundamentals** **2.3 Producing robust programs** **1.6 Ethical, legal, cultural and environmental impact** **1.3 Computer networks, connections and protocols**
Skills	**Primary storage (Memory)** **Secondary storage** **Units** **Data storage** **Compression** **Boolean logic**	**Languages** **The Integrated Development Environment (IDE)** **Programming fundamentals** **Data types** **Additional programming techniques** **Programming** **Scratch** **Python** **My SQL**	**Computational thinking** **Designing, creating and refining algorithms** **Searching and sorting algorithms** **Programming fundamentals** **Defensive design** **Testing** **Programming** **Scratch** **Python** **My SQL**
Progression	**7.1 Computer systems**	**8.1 Algorithms, Flowcharts and Pseudocode**	**7.1 computer systems**

	7.3 Data and data representation **8.3 Boolean logic and programming**	**8.2 Searching and sorting and programming** **8.3 Boolean logic and programming**	**8.1 Algorithms, Flowcharts and Pseudocode**
Link to GCSE / A-Level	**Link to A Level Computer Science** **BTEC Ext Cert Unit 1**	**GCSE 10.1Link to A Level Computer Science** **BTEC Ext Cert Unit 2**	**Link to A Level Computer Science** **BTEC Ext Cert Unit 2 &7**
Year 10			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**2.1 Algorithms** **2.2 Programming Fundamentals** **2.4 Boolean Logic** **2.5 The Integrated Development Environment (IDE)**	**1.6 Ethical, legal, cultural and environmental impacts of digital technology** **2.2 Programming Fundamentals** **2.3 producing robust programs**	**1.3 Computer Networks, connections and protocols** **1.4 Network security** **1.5 Systems Software**
Skills	**Computational thinking** **Designing, creating and refining algorithms** **Programming fundamentals** **Data types** **Additional programming techniques** **Boolean logic** **Languages** **The Integrated Development Environment (IDE)** **Programming to be delivered during theory units – likely to span cycle 1 and 2.**	**Defensive design** **Testing** **Analysis** **Debating skills** **Evaluation** **Theory into practice** **Programming** **Scratch** **Python** **My SQL**	**Networks and topologies** **Wired and wireless networks, protocols and layers** **Threats to computer systems and networks** **Identifying and preventing vulnerabilities** **Operating systems** **Utility software**
Progression	**8.1 Algorithms, Flowcharts and Pseudocode** **8.3 Boolean logic and programming**	**8.2 Programming** **Yr 9 core information Digital literacy** **Linked to ethical, moral, inclusivity discussion throughout KS3**	**7.1 Networks and OS** **7.2 CPU Performance**
Link to GCSE / A-Level	**Link to A Level Computer Science** **BTEC Ext Cert Unit 2 &7**	**Link to A Level Computer Science** **BTEC Ext Cert Unit 1**	**Link to A Level Computer Science** **BTEC Ext Cert Unit 1**
Year 11 – Transition to KS5			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**1.1 Systems architecture** **1.2 Memory and storage**	**Revision and external exams**	
Skills	**Architecture of the CPU** **CPU performance** **Embedded systems** **Primary storage (Memory)** **Secondary storage** **Units** **Data storage** **Compression**		
Progression	**7.1 Computer systems**		

	7.2 CPU Fetch-execute cycle **7.3 Data and data representation**		
Link to GCSE / A-Level	**Link to A Level Computer Science** **BTEC Ext Cert Unit 1**		

Year 12			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**Unit 1 Information Technology systems**	**Unit 1 Information Technology Unit 2 Creating systems to manage information**	**Unit 1 Information Technology Unit 3 Using Social Media in business**
Skills	**Digital devices, their functions and use** **Peripheral devices and media** **Computer software in an IT system** **Emerging technologies** **Choosing IT systems** **Transmitting data** **Connectivity** **Networks** **Issues relating to transmission of data** **Operating online** **Online systems** **Online communities** **Threats to data, information and systems** **Protecting data** **Impact of IT systems** **Online services** **Impact on organisations** **Using and manipulating data** **Moral and ethical issues** **Legal issues**	**Examining the structure of data and its origins, and how an efficient data design follows through to an effective and useful database.** **Relational database management systems** **Manipulating data structures and data in relational databases** **Normalisation** **Relational database design** **Design documentation** **Producing a database solution** **Testing and refining the database solution** **Database design evaluation and testing**	**Social media websites Business uses of social media Risks and issues** **Social media planning processes** **Business requirements** **Content planning and publishing** **Developing an online community** **Developing a social media policy** **Reviewing and refining plans** **Creating accounts and profiles** **Content creation and publication** **Implementation of online community building** **Data gathering and analysis Skills, knowledge and behaviours**
Progression **The assessment for this unit should draw on knowledge, understanding and skills developed from:**	**• Unit 2: Creating Systems to Manage Information** **• Unit 3: Using Social Media in Business.** **• Unit 6: Website Development.**	**Unit 1: Information Technology Systems** **Unit 3: Using Social Media in Business.**	**• Unit 1: Information Technology Systems** **• Unit 2: Creating Systems to Manage Information** **• Unit 6: Website Development.**

Link to A Level / Degree/world of work	**This unit will gives a fundamental and synoptic understanding of all areas of IT, supporting progression to an IT-related higher education course.**	**The skills gained in this unit support progression to IT-related higher education courses and to employment in a role that requires computing-related expertise.**	**Understanding how to use social media for business purposes is useful for employment in information technology and in a variety of business sectors.** **Also, social media skills are closely linked with web and mobile applications development.** **This unit is a starting point for progression to roles such as social media specialist, content developer and web developer.**
Year 13			
	Cycle 1	**Cycle 2**	**Cycle 3**
Content	**Unit 1: Information Technology** **Unit 3: Using Social Media in business** **Unit 6 Website development**	**Unit 1: Information Technology** **Unit 6:Website development** **Unit 1 Exam**	**Unit 1: Information Technology systems - Exam**
Skills	**Social media websites** **Business uses of social media** **Risks and issues** **Social media planning processes** **Business requirements** **Content planning and publishing** **Developing an online community** **Developing a social media policy** **Reviewing and refining plans** **Creating accounts and profiles** **Content creation and publication** **Implementation of online community building** **Data gathering and analysis Skills, knowledge and behaviours**	**Using scripting languages such as Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript® and a simple text editor, or rapid application development tools. Finally, reflecting on the website design and functionality using a testing and review process.** **Purpose and principles of website products** **Factors affecting website performance** **Website design** **Common tools and techniques used to produce websites** **Client-side scripting languages** **Website development** **Website review** **Website optimisation** **Skills, knowledge and behaviours**	**Use of social media for business purposes is useful for employment in information technology and in a variety of business sectors.** **Also, social media skills are closely linked with web and mobile applications development.** **This is a starting point for progression to roles such as social media specialist, content developer and web developer.**
Progression **The assessment for this unit should draw on knowledge, understanding and skills developed from:**	**Unit 1: Information Technology Systems** **Unit 6: Website development**	**Unit 1: Information Technology Systems** **• Unit 3: Using Social Media in Business**	

Link to A Level / Degree/world of work	**Understanding how to use social media for business purposes is useful for employment in information technology and in a variety of business sectors.** **Also, social media skills are closely linked with web and mobile applications development.** **This unit is a starting point for progression to roles such as social media specialist, content developer and web developer.**	**Many software developers, database experts and systems managers need web-client development skills as an integral part of their overall portfolio of expertise. This unit will prepare you for employment as a website developer or as a website development apprenticeship.** **Higher education courses in digital studies.**	