

Secondary Curriculum Information Pro-Forma

Subject:

Computer Science

Subject Leader:

J Yates

YEAR 7	Theme Title	Key Areas of Knowledge Acquisition	Key Skills and Processes Learned
Term 1 (September – October)	Under the Hood of a Computer	<ul style="list-style-type: none"> • Binary • Units of memory • Components of computer systems 	<ul style="list-style-type: none"> • Converting numbers from binary – denary • What components make up a computer
Term 2 (November – December)	Think Like a Computer Scientist Drawing & Manipulating Shapes	<ul style="list-style-type: none"> • Algorithms • Pattern Identification • Patterns & mathematics 	<ul style="list-style-type: none"> • Breaking down problems • Using graphical & text based languages to create shapes & patterns
Term 3 (January – February)	Creating an animation Foundations of Computing	<ul style="list-style-type: none"> • Algorithms & programming concepts • Origins of modern computing • Generations • How the CPU works 	<ul style="list-style-type: none"> • Sequences • Selection • Looping • Evolution of computers
Term 4 (March – April)	How the Web Works Web Page Creation	<ul style="list-style-type: none"> • What is the web? • Understanding what to trust online • Searching 	<ul style="list-style-type: none"> • Internet usability skills • Website design tools
Term 5 (April – May)	Human – Computer Interaction	<ul style="list-style-type: none"> • HCI and how it is changing • Operating system interfaces 	<ul style="list-style-type: none"> • Designing interfaces • Testing
Term 6 (June – July)	Representing Images Programming	<ul style="list-style-type: none"> • Pixels and images • Image size & file types • Simple programming operations 	<ul style="list-style-type: none"> • Programming variables • Programming operations • Using procedures & Functions

YEAR 8	Theme Title	Key Areas of Knowledge Acquisition	Key Skills and Processes Learned
Term 1 (September – October)	Operating Systems	<ul style="list-style-type: none"> • What an operating system is • What an operating system does 	<ul style="list-style-type: none"> • Understanding how to compare operating systems • Selecting the appropriate system for a given user or purpose

Term 2 (November – December)	CMD – Command line Binary	<ul style="list-style-type: none"> • The command line • Scripting • Storing data in strings 	<ul style="list-style-type: none"> • Manipulating files and folders • Converting numbers to and from binary • Binary addition
Term 3 (January – February)	Instruction design Programming	<ul style="list-style-type: none"> • Route finding and problem solving • Basic programming logic 	<ul style="list-style-type: none"> • Programming concepts • IF statements & Boolean operators • Nesting statements
Term 4 (March – April)	Programming Connecting to the Internet	<ul style="list-style-type: none"> • Algorithms • Hardware for connecting to the internet • Protocols and standards 	<ul style="list-style-type: none"> • Looping algorithms • Understanding what components are used in connecting to the internet and what they do
Term 5 (April – May)	Sorting	<ul style="list-style-type: none"> • Sorting algorithms 	<ul style="list-style-type: none"> • What are sorting algorithms • Bubblesort • Selectionsort • Comparing algorithms
Term 6 (June – July)	How to make a computer appear smart	<ul style="list-style-type: none"> • Artificial Intelligence 	<ul style="list-style-type: none"> • Developing simple programs • Storing responses • Introducing randomness

YEAR 9	Theme Title	Key Areas of Knowledge Acquisition	Key Skills and Processes Learned
Term 1 (September – October)	Cracking the code: Binary characters, cyphers & encryption	<ul style="list-style-type: none"> • Binary • Encryption 	<ul style="list-style-type: none"> • Converting numbers and text to and from binary • Understanding different forms of encryption
Term 2 (November – December)	Representing Sounds	<ul style="list-style-type: none"> • File sizes & bandwidth • Sampling and compression 	<ul style="list-style-type: none"> • Understanding the different units of measurement of computer memory • Understanding how compression rates affect sound quality
Term 3 (January – February)	Databases Searching	<ul style="list-style-type: none"> • Introduction to databases • Search techniques 	<ul style="list-style-type: none"> • Using Boolean expressions • Linear searching • Binary searching
Term 4 (March – April)	Networks	<ul style="list-style-type: none"> • Understanding protocols and layers • Different standards used on the internet • IP addresses 	<ul style="list-style-type: none"> • Understanding how we use MAC addresses • Hexadecimal • Network topologies
Term 5 (April – May)	Client-side & Server-side scripting Digital Circuits	<ul style="list-style-type: none"> • Web forms & client side scripting • Web servers & server side scripting • Web server databases 	<ul style="list-style-type: none"> • Understanding switches & gates • Semiconductors • Integrated circuits
Term 6 (June – July)	Computer Architecture	<ul style="list-style-type: none"> • Translators • The Von Neuman & Harvard architectures 	<ul style="list-style-type: none"> • Understanding libraries • How computers manage information

YEAR 10	Theme Title	Key Areas of Knowledge Acquisition	Key Skills and Processes Learned
<p>Examination Board and Specification Title & Number: OCR GCSE Computing (J275)</p> <p>Recommended reading/preparation: Course notes will be supplied. The Python interactive programming course on www.codecademy.com will help students to consolidate their programming skills.</p>			
Term 1 (September – October)	Computer Hardware Introduction to Programming	<ul style="list-style-type: none"> • Inside a PC • Input/Output devices • Storage • CPU, RAM, ROM 	<ul style="list-style-type: none"> • Understanding algorithms • Basic programming concepts • Logic gates
Term 2 (November – December)	Units of computer storage Python	<ul style="list-style-type: none"> • Units of storage • Binary addition • Ascii • Images & Sound compression 	<ul style="list-style-type: none"> • Programming <ul style="list-style-type: none"> ○ variables ○ Data types ○ IF ○ WHILE / FOR
Term 3 (January – February)	Planning Code Databases	<ul style="list-style-type: none"> • Pseudocode • Flowcharts • Database and relational database concepts 	<ul style="list-style-type: none"> • Programming <ul style="list-style-type: none"> ○ functions and procedures ○ SQL ○ Using MS Access
Term 4 (March – April)	A452 Practical Investigation Controlled Assessment 45 Marks 30% of total qualification	<ul style="list-style-type: none"> • Looking at Exemplar work 	<ul style="list-style-type: none"> • Investigative computing task assessing: <ul style="list-style-type: none"> ○ Research ○ Technical Understanding ○ Analysis of problems ○ Historical Perspective ○ Use of Technical Writing Skills ○ Recommendations/Evaluation
Term 5 (April – May)			
Term 6 (June – July)	Software Types	<ul style="list-style-type: none"> • Generations • Variables/Constants/Data Types • Software Categories • Operating Systems 	<ul style="list-style-type: none"> • Programming <ul style="list-style-type: none"> ○ Python Turtle ○ Lists ○ File Handling