The Roundwood Park COMPUTER SCIENCE learning journey

YEAR 7

- Introduction to Computer Science
- How do we communicate?
- Using & accessing Google Classroom
- Using & accessing Google Classroom
- Using email and presenting work
- Bebras logical thinking challenge
- Computer systems
- Peripherals
- Memory
- Secondary storage
- Operating systems
- Utility software
- Application software
- Python Turtle - Commands
- Python Turtle - Iteration
- Python Turtle – Nested loop commands
- Python Turtle – Procedures
- Data Representation – Data sizes

YEAR 8

- Data Rep – ASCII
- Data Rep – Denary/Hexadecimal conversions
- Data Rep – Binary conversions
- Data Rep – Binary addition
- Data Rep – Hexadecimal conversions
- Data Rep – Data sizes
- CiS – Netiquette
- CiS – Careers
- CiS – Artificial Intelligence
- CiS – Environment
- Computer in Society (CiS) – Digital divide
- Python Turtle – While loops
- Python Turtle – Choices
- Python Turtle – Statements & Variables
- Python Turtle – Loops
- Python Turtle – Functions
- Final year of **KS3**

YEAR 9

- Python – Strings & Variables
- Python – data types
- Python – Algorithms
- Python – IF Statements
- Python – WHILE loops
- Python – Lists
- Python – Searches
- Python – Loops
- Cyber Security (CS) – What is it?
- CS – Malicious code
- Data Rep – Binary Arithmetic
- Data Rep – Images
- Data Rep – Logic gates
- Data Rep – Data sizes
- Data Rep – Character sets
- Python – Procedures
- Python – Functions
- CS – Phishing & Pharming
- Start of **GCSE Computer Science**

YEAR 10

- Algorithms: Pseudocode
- Algorithms: Decomposition & Abstraction
- Algorithms: Using flowcharts
- Algorithms: Searching algorithms
- Algorithms: Sorting algorithms
- Sequence and Selection
- Iteration
- Programming Basics: Data types & Operations
- Arrays & Records
- Procedures & Functions
- Binary arithmetic and Hex
- Data Representation: Units & Binary numbers
- ASCII & Unicode

YEAR 11

- Impact of Digital Technology: Ethics
- Legislation & Privacy
- Environmental
- Non-Examined Assessment (NEA) programming task
- Structured Query Language (SQL)
- Relational databases and SQL: Databases
- Relational databases
- Malicious code
- Detection & Prevention
- Social engineering
- Cyber Security: Threats
- Protocols & Layers
- Network security
- Network topologies
- Networks: Wired & Wireless
- CPU, Memory & Secondary storage
- Systems architecture
- Programming languages
- Computer Systems: Boolean logic
- Application & System software
- Images, Sound & Compression

YEAR 12

- Algorithm design
- Bubble& insertion sort
- Processor components
- Types of processor
- OS functions/ Types of OS
- Programming language translators
- Writing and following algorithms
- Assembly language
- Compression and encryption
- RDMS and normalization
- Defining and updating tables using SQL
- Start of **Sixth Form at RPS (KS5)**
- Digital devices
- Function of digital devices
- Peripheral devices and media
- Merge/ quick sort
- Graph traversal algorithms
- Optimization algorithms
- Processor performance
- Input/Output/ Storage
- Nature of applications
- Systems analysis methods
- Programming paradigms
- Database concepts
- SQL
- Transaction processing
- Structure of the internet
- Network security & threats
- Internet communication
- HTML/JavaScript/ CSS

YEAR 13

- Start a degree level apprenticeship
- Go to university to enhance your studies and get a degree
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- Go to university to enhance your studies and get a degree
- Paper 1 exam
- Paper 2 exam
- Computer Projct
- Problem solving
- Problem recognition
- Logic gates/Boolean expressions
- Stacks/Hash tables
- Bitwise manipulation and masks
- Thinking abstractly/ahead/procedurally/logically/concurrently
- Legislation/Ethical /Cultural/Privacy/ Censorship
- Karnaugh maps/Adders/D type flip flops
- Graphs/Trees
- Queues/Lists/Linked lists
- Arrays/Tuples/Records
- Binary arithmetic/Floating point arithmetic
- ASCII/Unicode
- Data types
- Client-Server/P2P
- Search engine indexing
- OOP
- Recursion
- Sub-routines
- Iteration
- Selection
- Information Technology Systems (Exam)
- Equality and accessibility
- Ethical factors
- Environmental issues
- Website development (Assignment)
- Creating systems to manage information (Exam)
- Privacy
- Data manipulation
- Collecting data
- IT systems
- Using social media in business (Assignment)
- Utility and app s/w
- Operating systems
- Peripheral devices and media
- Connectivity
- Connection types
- Networks
- Data transmission
- System diagrams
- Online systems
- Selection of online systems
- Threats to data
- Impacts of threats
- Protecting data
- Encryption
- Legislation
- Back-up

BTEC Extended Certificate in IT

A Level Computer Science

KEY THEMES

- Computers in Society (CiS)
- Data Representation
- Programming